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He Saved $6.55 On Purchases, But — Production Showed a Loss of $250.00

He shopped for steel—placed orders with four firms and his purchase figures showed a saving of six dollars and fifty-five cents. But one source failed him and production in one department was tied up for almost three days with a loss of more than $250.00.—Just another case of expensive shopping around.

It is, of course, essential to know your markets and market prices—and to be sure that you do not pay above the market. However, when this is assured by a strong reliable source, it then definitely pays to concentrate your orders with that source. In the long run this policy will save money, will insure continuous production and quite incidentally will add ten years to your life.

A few of the 1,001 products always in stock, offering the opportunity to combine orders, deliveries, checking, and clerical work. Immediate shipment is assured.

Bars, Plates	Refined Iron	Rivets and Bolts	Babbitt Metal	Concrete Reinforcing
Structurals	Turned, Ground and Polished Shafting	Boiler Tubes and Fittings	Allegheny Metal (18-8 Stainless)	Firmtread Plates
Rails	Screw Stock	Welding Rod	Alloy Steel	Small Tools
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Sheets, Full Finished				

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STEEL-SERVICE

Volume 92 Number 2

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

IN MORE normal times the iron and steel industry would be entering the promised land at this season, with the railroads releasing large tonnages of track material, automobile manufacturers poised for approval of their new models, pipe mills and foundries building up stocks for spring laying, and the farm implement trade busy on tillage tools. Of the familiar market landmarks only the enterprising automobile manufacturer is now apparent (p. 11), yet there are favorable indicators.

Early January Steel Rate Beats December

For the first week of the new year steel production turns in an average of 15.5 per cent (p. 35), fractionally higher than December (p. 8), which is heartening in that it retained some of the fall recovery. . . . Thus far in January the mills are coasting on a carryover (p. 27); this week will see many consumers resuming, and probably reordering. . . . Most spirited of all departments of the industry is tin plate (p. 30), at 45 per cent. . . . Reopening of railroad shops (p. 31) may augur well.

U. S. in Cellar, but Looking Up

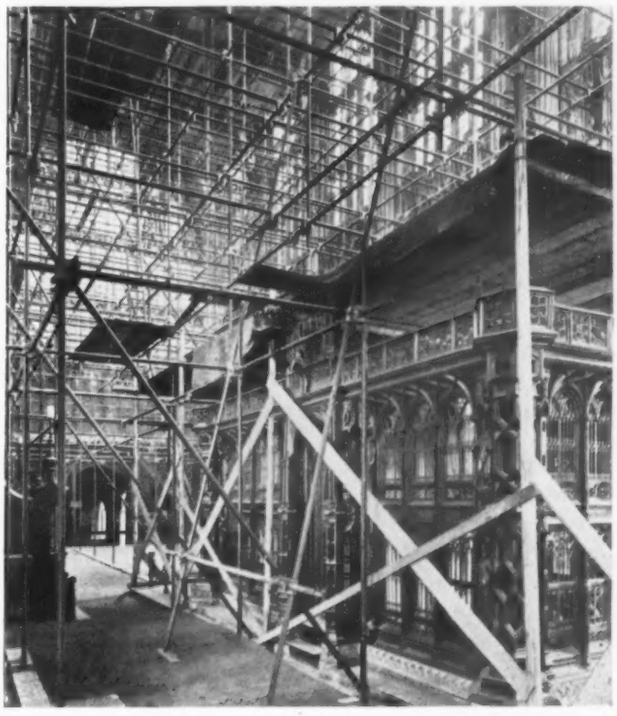
Even statistics on world production of steel, disclosing a reduction of 58 per cent from 1929, are encouraging when it is considered that deflation in the United States in 1932 reached the extravagant percentage of 75, compared with 32 per cent for Belgium, 43 for France, 46 for Great Britain and 65 for Germany (p. 7). Only the United States and Germany, of important steel producing nations, failed last year to equal their 1921 tonnage, suggesting that the pendulum has swung back too far.

Pig Iron Avoids Double Low in 1932

The painstaking observer may also assay some hope from pig iron statistics for December (p. 9). Down 15.3 per cent went the daily rate, to 17,650 gross tons, and a net decline of nine lowered the number of active stacks on Dec. 31 to 42, yet the December operating rate for the blast furnace industry—12.5 per cent—kept a half point above the August low. . . . In many districts, pig iron shipments in December exceeded expectations and maintained the November rate (p. 37), and January promises some gain.

Sight 15 Per Cent Recovery in Structurals

Structural fabricators, smarting under the losses inflicted by the evil of bid peddling, appraise 1933 as a 1,000,000-ton year or 15 per cent better than 1932 (p. 10). Much of this volume they expect to emanate from comparatively new sources, such as airports, hangars, seadromes and buildings forced by high land



—Acme Photo. Copyright, The Times

Opening of the new Lambeth bridge in London has so increased traffic near Westminster Abbey that scaffolding, mostly tubular steel, temporarily is protecting the Henry VII chapel

taxes. . . . In erecting 75,000 tons of steel for five Rockefeller Center buildings in New York (p. 25) there were only 83 accidents . . . . Any improvement in business will be without the aid of antidumping orders, it being apparent (p. 8) that the treasury is finding little support for dumping charges . . . . Contributing toward a readjustment in business is a revised plan (p. 7) of Chicago machinery dealers for handling machinery turn-ins, approved by the federal trade commission.

Gas or Salt Harden Steel Efficiently

Continuous gas carburizing for surface hardening steel is comparatively new, but its acceptance is rapid. Specially-designed furnaces have been in service sufficiently long to show (p. 17) that carburizing can be done on a production basis at a total cost of 0.31 cents per pound and that a case 0.035-inch thick can be obtained in 6.6 hours with a minimum of distortion and hardness extremely uniform. . . . Salt baths also are employed for hardening (p. 23), the temperature ranging from 1200 to 1700 degrees Fahr. and a magnetic detector type of control sometimes being used. When utilized for tempering, salt baths are held to a temperature of 300 to 1100 degrees.

Trend Is Toward Heavier Open-Hearth Roofs

In the past, no particular significance has been attached to the thickness of open-hearth furnace roofs with reference to the roof span, but there are indications that roofs are not thick enough for maximum stability and strength (p. 21). The trend is toward 22½-inch ribbed roofs. . . . One open-hearth furnace operator preheats fuel oil cheaply and efficiently by the use (p. 24) of insulated strip heaters clamped to the side of the tank. . . . Boasting of its progress in open-hearth construction, soviet authorities point (p. 13) to a production of 4,400,000 tons of ingots in nine months of 1932, compared with 2,200,000 tons in 1925.

Technocrats, Please Take Notice

Mill rolls weighing up to 60 tons are lifted expeditiously by a new type of roll-changing hook, constructed of arc welded steel plates, recently placed in service at a Cleveland steel plant (p. 19). The hook itself weighs 12 tons. . . . A rotating device, consisting of a girder and six hooks, suspended from an overhead crane hook, handles (p. 24) 20 tons of sheet bars, 18 inches wide and 30 feet long, in a single lift. All loading and unloading is performed by the crane operator, saving $14,000 annually in labor at one plant. . . . A new type of sheet roller leveler developed in Germany and recently introduced here incorporates (p. 24) a series of 38 backing-up rolls . . . . Steel castings containing 3 per cent chromium have been found (p. 20) to combine properties of hardness and toughness and well as good machinability, to a marked degree.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

A Brickbat for Technocracy Critics

To the Editor:

The editorial in your issue of Dec. 5 criticizing the findings of Technocracy would be more credible if it told all the truth. By quoting only in part from the articles in *New Outlook* you can readily enough present a case against the group.

I suggest that you re-enter the lists and tell the full facts before arraigning the investigators. Tell your readers that Charles Proteus Steinmetz and Thorstein Veblen were members of the group until their deaths; that Howard Scott, government engineer on Muscle Shoals, is now the leader in the movement; that the greatest university in the country—Columbia—houses them and provides laboratory facilities; and that Technocracy sees in the machine not inevitable chaos in 18 months, but a real hope for economic salvation if the machine is only used properly.

There can be no "confusion" in the mind of anyone who reads Mr. Parrish's articles with reasonable intelligence. But there really does appear to be some confusion in the minds of the so-called business "leaders" today about the muddle into which their own short-sighted policies have plunged us all.

L. R. RANSOM

Columbus, Ind.

Profits in the Steel Industry

To the Editor:

I was very much interested in Mr. Newton's three articles on profits in the steel industry. He has attacked the matter from the accounting, or static viewpoint, I feel.

Let us ask ourselves where the steel industry is in its development and what returns might be expected under reasonably competitive conditions.

It has been said that the life of an industry can be depicted roughly by an "S" curve. Beginning slowly and uncertainly it gradually goes into a second type of rapid development from which it emerges after a time to a steady period, and then falls off. At different points of such a curve one would expect to find different profits. I suggest that the steel industry is somewhere near the leveling off point in the curve and we can therefore expect diminishing profits as a natural course of events. One might also expect to find particular attention being paid to organization, and costs of all kinds.

With regard to provision for depreciation it seems to me that corporations pursuing the policy of financing expansions out of profits have little need to worry about large reserves for this purpose. If such expansions were financed out of security issues, reserves for depreciation would become very important.

The above are my personal views and are offered as a different viewpoint from the one you presented. I have tried to present a more dynamic viewpoint than that of Mr. Newton.

S. H. DAVIES

Chicago.

Extreme Deflation an Omen Of Early Recovery in Steel

DESPITE the lack of definite assurances from principal consumers, producers of steel in the United States are confident of some expansion of their tonnage in 1933. To a large extent this underlying confidence is supported by the evidence that the liquidation by users since 1929 has exceeded the necessity.

If a comparison with other leading steel producing nations of the world be a trustworthy guide, the contraction in requirements for steel in the United States has patently got out of bounds in the past three years. From the peak of 1929, the pendulum has swung farther in reaction in the United States than in any other important country.

Decline Is 58 Per Cent

From 1929 to 1932 the decline in the output of steel ingots and castings in the world was from 117,980,000 gross tons to 49,160,000 tons, or 58 per cent. During this period the tonnage of the United States shrank from 55,650,000 to 13,500,000, or 75 per cent.

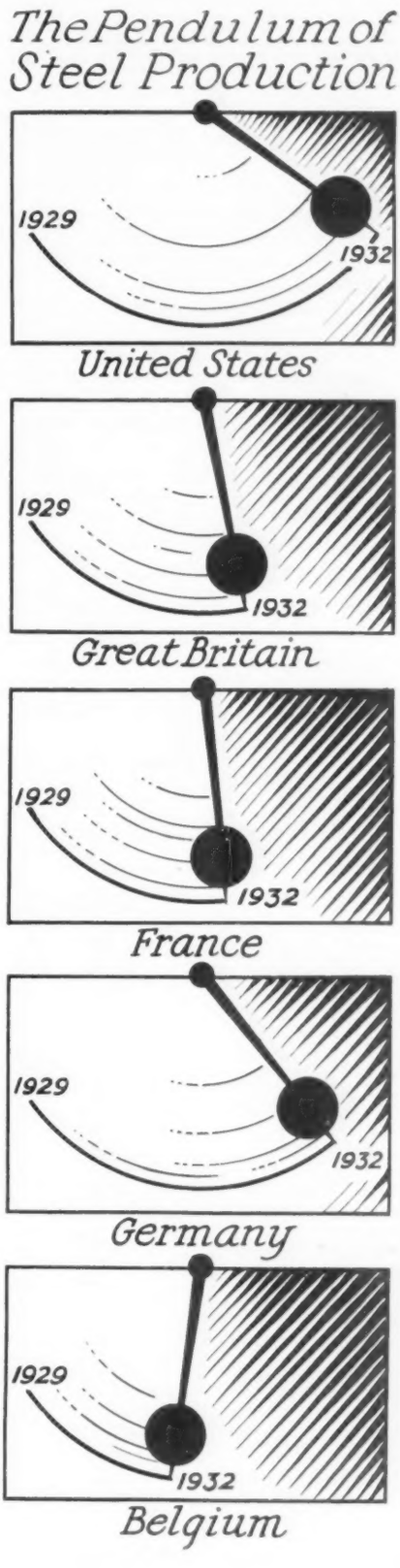
In the same period Great Britain receded from 9,636,000 tons to 5,179,000 tons in 1931 and came back to 5,240,000 tons in 1932, making the net shrinkage from 1929 to 1932 46 per cent.

Also from 1929 to 1932 the decrease in France was from 9,544,000 tons to 5,475,000 tons, or 43 per cent; in Germany from 15,986,000 tons to 5,655,000 tons, or 65 per cent; in Belgium from 4,067,000 tons in 1929 to 2,745,000 tons in 1932, or 32 per cent. These statistics are from the Jan. 2 issue of STEEL, page 82.

Rises Higher, Falls Harder

To make the comparison apt, as depicted in the next column, if the reduction in output of steel in the United States in 1930, 1931 and 1932 be considered 100, the decline in Great Britain was 60, in France 59, in Germany 86, and in Belgium 43. The comparison for Great Britain gives effect to the slight improvement last year.

The surface explanation of the reason for the extreme liquidation in the United States the past three years is that this nation attained a greater heighth than any other in 1929. A defensible comparison, however, is difficult to make because of the impossibility of ascertaining just when the pendulum started to swing forward.



What has been called liquidation has been in process only the past three years, but from 1922 to 1929 the increase in production has been continuous, and if 1921 be omitted, the increase may be said to have started in 1908. Again excepting 1921, the pendulum may be considered to have swung as far back in three years as it progressed forward in 21.

It may be an encouraging indication that ouside of the United States comparatively few nations failed to make in 1932 more steel than they produced in 1921. In addition to the United States only Canada, Germany, Austria and Poland were unable to better their 1921 tonnage. Among the nations exceeding 1921 are Great Britain, France, Belgium, Luxemburg, Italy, Spain, Sweden, Czechia, Hungary, Russia, Japan, India and Australia.

Chicago Machinery Plan Is Revised

A "CEASE and desist" order issued to various machinery distributors in the Middle West by the federal trade commission on Sept. 29 has been met by a modification of the so-called "Chicago" plan against which it was directed. The commission has accepted the report on the revised plan as compliance with its order, with the understanding that at the end of a year's time a study will be made of the manner of operation.

Proponents of the Chicago plan claim that it has corrected some of the oldest evils in the machinery business. Among these is the pitting of one supplier against another, especially in regard to turn-ins on old equipment which formerly were used to secure destructive price concessions. To remedy this and other practices which had resulted in demoralizing the industry, members operating under the Chicago plan agreed to post bids for old machines offered as part payment for new equipment. This information, but not the bidder's name, was made available to other members. The bidder making the first or highest appraisal further agreed to accept the old equipment at the price quoted, regardless whether he or another supplier received the order for the new equipment.

This arrangement was adjudged to be illegal by the federal trade commission insofar as it eliminated competitive bidding by its members. It was contended, however, that some features of the plan were beneficial and desirable. Accordingly, a re-

vision was undertaken to remove the objectionable elements of the plan while retaining those which were proper.

The modified plan retains the registration of bids formerly employed but distinguishes between "firm offers" and "allowances." The member making the bid has the option of choosing between these two forms. If he makes a firm offer he becomes obligated to accept the traded-in machine whether he gets the new machine order or not, as under the old plan. If he makes an allowance he does not agree to take the old machine unless he receives an order for the new.

December Ingot Production Declines But Exceeds Midsummer Low Record

ALTHOUGH production of steel ingots in the United States in December dropped to 32,485 tons per day from 39,081 tons in November, the month did not recede to the level of August, which was the year's low. December production also was above that of July, which was midway between August and December in daily average production and in rate of operation.

Total calculated output for the entire year 1932 was 13,095,727 gross tons, a shade more than half the total for 1931, which was 25,192,715. Rate of operation averaged 19.41 per cent in 1932 and 38.13 per cent in 1931. As a whole, the figures for 1932 are close to half those of 1931.

Bessemer production in December was the lowest of the entire year, 82,652 tons reported, compared with 97,323 tons in August, the lowest month.

Comparing the per cent of operation, December, 1932, dropped 3.03 points from November, while in 1931 December dropped 6.41 points from the rate of November. Thus in 1932, December held well against the seasonal decrease due to conditions inherent in the close of a year.

Figures are by the American Iron and Steel institute, New York.

R. W. Simpson Dies

R. W. Simpson, formerly superintendent of finishing mills, Lukens Steel Co., Coatesville, Pa., is dead.

Steel Ingot Production — 1931-32

95.33 Per Cent of Industry Reporting
Gross Tons

1931	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	2,098,175	296,620	2,394,795	2,512,140	27	93,042	43.80
Feb.	2,131,079	296,974	2,428,053	2,547,027	24	106,126	49.96
Mar.	2,565,531	346,137	2,911,688	3,054,339	26	117,475	55.30
Apr.	2,321,043	316,668	2,637,711	2,766,959	26	106,421	50.09
May	2,130,805	301,639	2,432,444	2,551,633	26	98,140	46.20
June	1,782,007	246,365	2,028,372	2,127,762	26	81,837	38.52
July	1,574,379	225,030	1,799,409	1,887,580	26	72,599	34.17
Aug.	1,462,254	174,380	1,636,634	1,716,829	26	66,032	31.08
Sept.	1,274,072	199,151	1,473,223	1,545,411	26	59,439	27.98
Oct.	1,319,958	195,943	1,515,901	1,590,180	27	58,896	27.72
Nov.	1,276,856	240,441	1,517,297	1,591,644	25	63,666	29.97
Dec.	1,068,384	172,046	1,240,430	1,301,211	26	50,047	23.56
Total	21,004,543	3,011,394	24,015,937	25,192,715	311	81,006	38.13
1932							
Jan.	1,230,661	160,633	1,391,294	1,459,450	26	56,133	25.96
Feb.	1,232,568	157,067	1,389,635	1,457,710	25	58,308	26.96
Mar.	1,149,307	193,944	1,343,251	1,409,054	27	52,187	24.13
Apr.	1,036,227	144,197	1,180,424	1,238,250	26	47,625	22.02
May	950,785	103,593	1,054,378	1,106,030	26	42,540	19.67
June	755,123	100,249	855,372	897,275	26	34,511	15.96
July	652,650	102,872	755,522	792,533	25	31,701	14.66
Aug.	696,206	97,323	793,529	832,402	27	30,830	14.26
Sept.	804,556	124,970	929,526	975,061	26	37,502	17.34
Oct.	885,773	132,876	1,018,649	1,068,550	26	41,098	19.00
Nov.	838,559	128,844	967,403	1,014,794	26	39,031	18.05
Dec.	722,522	82,652	805,174	844,618	26	32,485	15.02
Total	10,954,937	1,529,220	12,484,157	13,095,727	312	41,973	19.41

Figures exclude crucible and electric ingots. Operating percentages for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930; for 1932 on 67,473,630 tons as of Dec. 31, 1931.

The Business Week In Washington

WASHINGTON—Reports being received by the customs bureau of the treasury department, in connection with alleged dumping of various iron and steel products, thus far fail to substantiate the charges, it is said.

Final reports have not been received in any case but the preliminary reports are claimed not to be encouraging, from the standpoint of domestic producers and complainants, except in the case of some products from the Saar.

The customs bureau is attempting to dispose of all dumping cases before March 4.

□ □ □

A resolution by Senator Pat Harrison, Democrat, of Mississippi, directing the senate finance committee to obtain the view of economists and financiers on present economic problems, was said by the author, when quizzed by Senator David A. Reed, Republican of Pennsylvania, to be broad enough to include the effect of the depreciation of foreign currencies and the adequacy of the tariff. Hearings probably will be held later in the month.

□ □ □

Union Shipbuilding Co., Baltimore, has bid $1.06 per gross ton for the recoverable metal in 40 obsolete ships offered by the shipping board for scrapping. The Sun Shipbuilding & Drydock Co., Chester, Pa., has bid $1.25 per gross ton for recoverable material in 10 vessels and N. Block and L. Chenman, Norfolk, Va., $1.47 per ton for the 12 vessels at Norfolk.

□ □ □

A cablegram from Commercial Attache Allport, at Paris, to the department of commerce states that the system of quota restrictions on imports into France is to be continued for the first quarter of this year.

The first quarter quota from the United States for steel sheets for automobile bodies was exhausted by excess imports during 1932, with the result, he reports, that no further shipments from the United States will be admitted until April 1. Quotas for certain machines and machine tools are relatively unchanged, except that for unspecified machine tools, which is reduced from 9.6 metric tons to 2.6 metric tons as a result of excess previous shipments.

□ □ □

The treasury department has announced the allowance of drawback on steel sheets and strip steel manufactured by the Sharon Steel Hoop Co., Sharon, Pa., with the use of imported ferromanganese or ferro-

manganese produced under drawback regulations, at its plants at Sharon, Pa., and Lowellville and Youngstown, O.

□ □ □

The Champion Rivet Co., Cleveland, has filed a claim against the government in the United States court of claims for refund of certain income taxes for the year 1920, amounting to $76,245.

□ □ □

Latest statistics by the Reconstruction Finance Corp. show that since its organization early in 1932 it has loaned $1,502,168,401, of which $283,049,032 has been repaid. Loans to the railroads total $328,519,202.

□ □ □

The attorney general has ruled that in spite of the most favored nation treaties, imports of coal from both Great Britain and Germany are dutiable, giving importers a chance to take the case into the courts for final decision.

□ □ □

Carload rates charged on structural iron and steel from the Pittsburgh district to Brookport, Ill., and from Buffalo to Louisiana, Mo., have been found inapplicable by the interstate commerce commission in a decision in the case of the Wisconsin Bridge & Iron Co., Milwaukee, against the Illinois Central railroad.

□ □ □

A recent treasury decision providing for the allowance of drawback on ferromanganese manufactured by the Lavino Furnace Co. at its plant at Marietta and Sheridan, Pa., and Reusens, Va., with the use of manganese ore and manganiferous ore, has now been amended as of its original effective date by eliminating Marietta and providing for the allowance of drawback on the basis of the quantity of manganese ore and manganiferous ore used in the manufacture of the exported ferromanganese.

DECEMBER IRON PRODUCTION

	No. in Blast last day of month		Total tonnage made		
	Dec.	Nov.	Merchant	Nonmerchant	Total
Ohio	12	16	30,583	140,234	170,817
Penna.	13	15	27,872	100,223	128,095
Ala.	3	5	34,073	11,461	45,534
Ill.	3	4	20,939	28,567	49,506
N. Y.	1	2	1,963	23,178	25,141
Colo.	0	0			
Ind.	4	4			
Md.	2	2	184	77,719	77,903
Va.	0	0			
Ky.	1	1			
Mass.	0	0			
Tenn.	0	0			
Utah	1	1			
W. Va.	1	1	.....	36,252	36,252
Mich.	1	0			
Minn.	0	0			
Mo.	0	0			
Ferro & spiegel —all states			.....	13,931	13,931
Total	42	51	115,614	431,565	547,179

Iron Output Is 36-Year Low; December Tops August Bottom

WITH a total of only 8,674,067 gross tons of coke pig iron produced in the United States in 1932, output dropped to the lowest figure for the country since 1896, when approximately 8,482,000 tons was made. Compared with the 18,263,011 tons produced in 1931, the 1932 total was a loss of 9,588,944 tons, or 52.5 per cent, while against the record 42,270,183 tons of 1929, last year's output was only 20.5 per cent.

Average daily production for 1932 was 23,699 tons, contrasted with 50,035 tons in 1931, 86,141 tons in 1930, and 115,808 tons in the peak year 1929.

December's total production of 547,179 tons made a sharp drop of 78,574 tons, or 12.5 per cent, from the 625,753 tons of November, and this in spite of the fact that December had one more day than November. Average daily production of 17,650 tons was 3208 tons per day, or 15.3 per cent, below the November average of 20,858 tons. Both total output and daily rate were better than the 36-year low point of August, in which month the total was 528,105 tons and daily rate 17,035 tons.

AVERAGE DAILY PRODUCTION

	1932	1931	1930	1929
Jan.	31,336	55,337	91,573	110,742
Feb.	33,122	61,114	101,640	114,942
Mar.	31,194	65,448	104,930	119,622
Apr.	28,524	66,986	106,371	122,106
May	25,282	64,355	104,564	125,753
June	20,867	54,599	97,817	123,837
July	18,394	47,170	85,110	122,016
Aug.	17,035	41,264	81,455	120,845
Sept.	19,788	38,947	75,893	116,548
Oct.	20,795	37,831	69,851	115,747
Nov.	20,858	36,727	62,182	106,081
Dec.	17,650	31,625	53,732	91,513
Av.	23,699	50,035	86,141	115,808

Active furnaces on Dec. 31 totaled 42 and exceeded by just one furnace the all-time low mark of 41 on Aug. 31. The figure for Nov. 30 was 51, thus the month's curtailment was nine furnaces. Starting with 61 in January, the year's high point was reached in February with 64. From this, operating stacks dropped to 60 in March; 59 in April; 54 in May, 47 in June, 45 in July and 41 in August. The number then turned upward to 46 in September, 50 in October and 51 in November.

Relating production to capacity, the operating rate for December was 12.5 per cent, against 14.7 in both November and October. The year's highest operation was 23.4 per cent in February; and the lowest, 12.0 per cent in August.

During December, only one furnace was blown in and ten were blown out or banked. Nonmerchant or steelworks stacks gained one and lost six; merchant gained none and dropped four.

The furnace resuming in December was the Detroit A stack of the National Steel Corp. Furnaces blown out or banked were: In Ohio: Toledo A, Interlake Iron Corp.; Portsmouth, Wheeling Steel Corp.; Jisco, Jackson Iron & Steel Co.; Ohio No. 2, Carnegie Steel Co. In Pennsylvania: Carrie No. 7, Carnegie Steel Co.; one Aliquippa, Jones & Laughlin Steel Corp. In New York: Buffalo No. 1, Republic Steel Corp. In Alabama: Woodward Nos. 2 and 3, Woodward Iron Co. In Illinois: South Works No. 6, Illinois Steel Co.

With the American Rolling Mill Co. dismantling and tearing down its No. 2 furnace at Ashland, Ky., the number of potential blast furnaces in the country is reduced from 292 to 291. This furnace, built in 1888 and rebuilt in 1905, had an annual capacity of 62,600 tons.

MONTHLY PIG IRON PRODUCTION

	1932	1931	1930
Jan.	971,437	1,715,443	2,838,751
Feb.	960,550	1,711,192	2,845,937
Mar.	967,015	2,028,906	3,252,822
April	855,734	2,009,582	3,191,119
May	783,769	1,995,001	3,241,477
June	626,015	1,637,998	2,934,508
July	570,222	1,462,270	2,638,441
Aug.	528,105	1,279,205	2,525,105
Sept.	593,640	1,168,436	2,276,781
Oct.	644,648	1,172,781	2,165,374
Nov.	625,753	1,101,820	1,865,458
Dec.	547,179	980,377	1,665,715
Total	8,674,067	18,263,011	31,441,488

RATE OF OPERATION

(Relation of Production to Capacity)

	1932[1]	1931[2]	1930[3]	1929[4]
January	22.1	38.4	65.0	79.0
February	23.4	42.5	72.1	82.2
March	22.0	45.4	74.5	85.5
April	20.2	46.5	75.4	87.4
May	17.9	44.7	74.2	89.8
June	14.7	37.9	69.3	88.5
July	13.0	32.7	60.3	87.2
August	12.0	28.7	57.8	86.4
September	14.0	27.0	53.8	83.3
October	14.7	26.3	49.6	82.6
November	14.7	25.5	44.1	75.8
December	12.5	22.0	38.1	65.5

[1]Based on capacity of 51,598,175 gross tons Dec. 31, 1931; [2]on capacity of 52,515,875 tons; [3]on capacity of 51,490,680 tons; [4]on capacity of 51,069,895 tons. Capacities by American Iron and Steel institute.

Forecasts Million Ton Shape Year; New Outlets Promising

STRUCTURAL steel awards in 1933 will approximate 1,000,000 tons, compared with about 850,000 tons in 1932, 1,900,000 tons in 1931 and 2,900,000 tons in 1930, states the American Institute of Steel Construction, New York, in a statement to Secretary of Commerce Chapin, at Washington, on the business prospect for 1933.

To a large extent, future business will emanate from sources not now generally considered, such as replacement of low buildings occupying valuable land, seadromes, hangars, and airports, according to the association, whose full statement follows:

"The United States is reputed to have a capacity to fabricate and erect 400,000 tons of structural steel monthly, and if this large total could ever be achieved it would require 4,800,000 tons of business annually to keep our available plants full to capacity. A business running to 75 per cent of capacity is considered fairly prosperous. In 1929 the industry fabricated 3,842,300 tons. It has never exceeded the 4,000,000 tons figure.

South and West Look Best

"The decline in total business has been constant and drastic since 1929. The business amounted to approximately 2,900,000 tons in 1930; 1,900,000 tons in 1931, and probably not much in excess of 850,000 tons in 1932. The business during this last year has been drastically curtailed by reason of the financial liquidation of all businesses.

"Approximately half of the structural steel fabrication and erection has been located in the industrial East. Here, business prostration has been the most severe and the outlook for recovery is blackest. In the southern and western sections of the country, reports from fabricating shops indicate that the business promised during 1933 will be an improvement over 1932. If the total for the country exceeds 1,000,000 tons present anticipations of the industry will be approximated.

"Without public works the industry would have had little, if any, business during 1932. Bid peddling by general contractors engaged in public works has been the keenest and the most destructive ever practiced, resulting in taking from the fabricators engaged in public works all profits and loading them down with unnecessary losses. It has contributed in no small measure to the inhumane deflation of wages in the industry.

"With the resumption of railroad buying we may expect to sell fabricated steel for grade separation work, terminals and the rebuilding of bridges to accommodate heavy traffic. There is little hope for any immediate demand for new industrial buildings, and the real estate markets in the cities are stagnant because of the heavy mortgage load.

"The market for the future will be partially made up of structures which are now not thought of. Vast tonnages which will be required in the future in the building of elevated highways in the cities and other congested places.

New Bridges for Heavier Traffic

"Bridges will be built over ravines, streams and rivers as population increases in certain areas. Narrow bridges will be razed and wider ones built as traffic becomes denser. Hangars, airports, with all the necessary buildings will have to be constructed, as well as the approaches to them.

"Seadromes will undoubtedly be built—engineers are already engaged on one. Low buildings occupying valuable land will necessarily have to be torn down and replaced by taller and better buildings in order to produce enough revenue to pay taxes.

"The industry is anticipating that some of this market will develop during 1933."

G. E. Merges Turbine Sales; R. B. Beale Is New Head

The turbine sales department of the General Electric Co., Schenectady, N. Y., has been consolidated with the central station department of the company, as a division of that department, it has been announced by J. G. Barry, vice president, following the previous announcement of the retirement of Elmer E. Gilbert, manager of the turbine sales department. R. B. Beale, former assistant manager of the turbine sales department, succeeds Mr. Gilbert with the title of manager of the turbine division.

Mr. Beale, a native of Washington, was graduated from Maryland State college in 1896 with the degree of bachelor of science, and from Johns Hopkins university in 1899 with the degree of electrical engineer. He entered the testing department of the General Electric Co. in 1889, and in 1901 entered the direct-current engineering department. In 1902 he was transferred to the lighting commercial department, now the central station department. He was transferred to the turbine department in 1907, and in 1922 was appointed assistant sales manager of the department.

Honor Clairton Officials

Tribute was paid to the new and retiring superintendents of the Clairton, Pa., works of the Carnegie Steel Co., Pitsburgh, by more than 5000 Clairton citizens in the Clairton high school auditorium, Jan. 3.

I. Lamont Hughes, president of the company, and L. H. Burnett, vice president, were among the speakers. H. J. Davis is the retiring superintendent of the Clairton plant and Frank P. Marquard his successor.

Consider Rates Jan. 13

Proposal for a reduction of railroad freight rates on iron and steel from the Pittsburgh and Youngstown, O., districts to Detroit, Cleveland, and Toledo, O., will be considered at a public hearing at Pittsburgh, Jan. 13, before the Central Freight, New England Freight and Trunk Line associations.

Fewer Hold Steel Common

Common stockholders of the United States Steel Corp. totaled 190,619 on Dec. 1, a decrease of 115 from Oct. 1. On Dec. 31, 1931, stockholders numbered 174,507. The preferred dividend in November went to 62,259 persons, compared with 58,004 in November, 1931.

Imports Hit Buffalo Iron

Due, it is claimed, to inroads of foreign iron, Buffalo district furnaces shipped east on the New York state barge canal in 1932 only 28,073 tons of pig iron, compared with 72,675 tons in 1931 and in excess of 105,000 tons in previous years.

Taylor Returns This Week

Myron C. Taylor, chairman of the United States Steel Corp., is expected back in New York this week from a European trip. A decision facing directors of the Steel corporation this month is the preferred dividend. The report for the fourth quarter is due Jan. 24.

MIRRORS OF MOTORDOM

DETROIT

THEY'RE off! With the opening of the New York national show Jan. 7, followed during the remainder of January by local shows in 20 cities and the national show at Chicago beginning Jan. 28, the big retail push of the automobile industry is on.

Estimates of the sum expended by the industry for designing, engineering and retooling for the new models, exclusive of materials required for production, are as high as $50,000,000, but half that sum is probably nearer correct.

In preparation for the shows, December assemblies of motor cars approximated 110,000 units, with schedules for January indicating a slight increase. February production will hinge upon the retail acceptance of the new models, plus the extent to which Ford offsets the defection of other makers, who by that time will have stocked their dealers.

No Chance for Standstill

The question is asked, why spend $20,000,000 to $25,000,000 for new models when the advances incorporated in 1932 cars were put in the hands of fewer than 1,200,000 buyers, and if no changes were made at this time the 1932 models apparently would be perfectly good for prospective buyers?

The answer is that annual model changes are a deeply-rooted item on the industry's program, and that the industry is so highly individualistic that even an agreement to concentrate the showing of new lines in January broke down several years ago.

A year ago, it will be recalled, there was a wave of gadgetry. Loath to make major changes in bodies and chassis, both on account of the cost and the unpromising retail market, the industry splurged on a number of mechanical devices which provided sales talking points. This year mechanical changes again are subordinate, but a wave of streamlining has engulfed the industry and probably in no previous year have bodies been so radically redesigned.

Excepting Chrysler, the fender valances first introduced by Graham a year ago have swept the industry. To almost an equal extent the so-called beavertail back, brought out by Nash and designed to prevent retarding air pockets, has been accepted. The net result is to increase appreciably the requirement for steel, chiefly sheets.

Freewheeling Now Controlled

Two of the 1932 favorites—freewheeling, and dash or steering wheel control of shock absorbers—have been materially modified in the 1933 models. The trend in the so-called ride controls is toward thermostatic regulation, eliminating the personal element. Freewheeling is almost invariably of the controlled type this year.

Probably being publicized more than any other body change, is the Fisher no-draft system of divided windows. A competing system is that of Hudson, using a draft from the windshield. Chevrolet and De Soto, to mention two, have linked the starter with the accelerator pedal. The power brake, deriving its energy from the driveshaft, has appeared on the Pierce-Arrow.

A new style in headlamps, reminiscent of Pierce-Arrow, makes the Willys distinctive. Buick features a controlled beam headlight to eliminate blinding oncoming drivers.

The trend toward controlling engine vibration, initiated by Chrysler, has been carried along by General Motors with a new style of mounting which, it is claimed, arrests vibration in two planes. Willys offers floating power under a patent arrangement with Chrysler.

More attention has been paid to the quality of gasoline in making mechanical changes for 1933. Vapor lock is said to be more prevalent since the fuel pump supplanted the vacuum tank, and in order to cool gasoline many manufacturers are now running on the outside of the frame the gasoline line from the tank at the rear to the pump.

A majority of the low and medium-price cars for 1933 are designed to operate on 65 octane gasoline. Chevrolet, it will be recalled, has an octane selector mounted on the ignition, enabling the owner to adjust the timing to any grade of gasoline. Some engineers advised recommending to buyers the use of a stated octane rating of gasoline, but sales departments overruled them.

The Auto That Jack Bought

In a small city in northwestern Ohio is a plant, specializing on automotive parts, which recalled some workmen recently on receiving an order from an automobile manufacturer. The confidence of one workman thus restored to the payroll was buoyed sufficiently to result in his making a down payment on a new car, which happened to be made by the manufacturer whose order had reopened the plant.

On hearing that this workman had purchased a new car the head of the plant dismissed him, hiring in his place a man whom he said was more worthy and prudent. The discharged workman was compelled to turn his car back to the dealer, who informed the factory of the situation.

Developments came fast, then. The factory cancelled the parts order; the parts manufacturer sought an explanation and was advised that his

(*Please turn to Page* 34)

Industrial Men in the Day's News

C. L. Schoonover, President and General Manager, Warren Tool Corp.

HIS new post follows successful operation of the business as trustee, which he assumed in 1929 after being retired four years.

PRIOR to leaving business, he was an executive of the General Fire Extinguisher Co., also of Warren.

WHEN business permits, he golfs and shoots, spending the winter holidays at Pinehurst.

C. L. SCHOONOVER, president and general manager of Warren Tool Corp. Warren, O., has returned to active business after having been retired since 1925.

He was born in Akron, O., Aug. 11, 1869, and following his graduation from Akron high school he attended Hammel Business college in Akron.

In 1892 he was appointed bookkeeper of Neracher Sprinkler Co., Warren. When this company was reorganized into the General Fire Extinguisher Co. of Warren, he continued with the organization, rising through the positions of department cashier, superintendent of engineering and construction, assistant plant manager to plant manager in charge of pipe fabricating shop and fittings foundry. In August, 1925, he retired.

In August, 1931, Mr. Schoonover was employed by the Midland bank at Cleveland as trustee of the Warren Tool & Forge Co. He operated the business for 14 months as agent for the trustee and the receiver. Upon reorganization of the company into Warren Tool Corp. in October, 1932, he was retained to head the new company as president and general manager.

Mr. Schoonover for 30 years was secretary and treasurer of Trumbull Country club, Warren, and still holds membership in the club. He also belongs to the Trumbull club, the Elks club, and the Tin Whistle club of Pinehurst, N. C. For several years he spent the winter holiday season at Pinehurst. His recreational interests are chiefly golf and shooting.

KENNETH B. LEWIS, in charge of wire machinery sales of the Morgan Construction Co., Worcester, Mass., resigned recently after 20 years of service with this company and now is engaged as a consultant in the manufacture of wire with offices at 17 East Forty-second street, New York.

After graduating from Harvard university in 1904 Mr. Lewis became associated with the Bethlehem Steel Co., Bethlehem, Pa., serving a short apprenticeship in each department of that plant. Later he was transferred to the open-hearth department, where he advanced from third helper to assistant superintendent. Leaving Bethlehem in 1908, he spent two years with the American Steel & Wire Co., Worcester, Mass., engaged in experimental work in connection with the development of new processes, investigations into the causes of faulty wire, etc.

In 1909 Mr. Lewis joined the Morgan Construction Co. in charge of wire drawing machinery, and since has traveled in many countries in Europe, South America and the Far East. He has been a persistent advocate of continuous dry drawing of wire and is the sponsor of a machine now successfully used for this purpose. The recently completed wire mill of the Sheffield Steel Corp., Kansas City, Mo., was built under his engineering supervision. Mr. Lewis has contributed many articles to the technical press on the practice of wiremaking and played a large part in the inauguration of the Wire association three years ago.

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H. A. Brassert, president of H. A. Brassert & Co., consulting engineer, Chicago, has returned from Europe where he closed a contract with Stewarts & Lloyds Ltd. for the construction of a steel plant at Corby, in Northamptonshire. This project will parallel the condition of steel production in Lorraine and Luxemburg.

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Guy Danielson, formerly secretary-treasurer, Brauer Machine & Tool Co., Oklahoma City, Okla., is now special representative, oil tools division, Chicago Pneumatic Tool Co. with headquarters at 1 West Sixteenth street, Oklahoma City.

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A. N. Vogt, 14 years with the Central Alloy Steel Co., Massillon, O., and recently with the Associated Alloy Steel Co. Inc., Cleveland, has become a special sales representative in the hot-rolled bar division of the Youngstown Sheet & Tube Co., Youngtown, O.

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Nelson E. Chance, formerly district manager of the Houston, Tex., office of the Brown Instrument Co., Philadelphia, for ten years with the com-

pany, has been appointed assistant sales manager with headquarters at Philadelphia.

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A. G. Hough, vice president, Wiard Plow Co., Batavia, N. Y., now is also treasurer, succeeding Mrs. N. P. Bosworth, who has been treasurer since 1903.

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Thomas G. Fear, recently general manager of operations of the Consolidation Coal Co., Fairmont, W. Va., has been appointed assistant to the president of the H. C. Frick Coke Co., Pittsburgh.

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N. L. Moon, Alan Wood Steel Co., Conshohocken, Pa., again is chairman of the iron and steel committee of the Atlantic States Shippers Advisory board for 1933, with J. K. Hiltner, United States Pipe & Foundry Co., Burlington, N. J., vice chairman.

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Benjamin Schwartz, director of the Institute of Scrap Iron and Steel Inc., New York, is now also acting as consultant of the Hobert Industrial Consultants & Engineers, New York. He will advise on legal, taxation, insurance, reorganization and industrial surveys.

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Norton T. Jones, organizer and founder of the Superior Screw & Bolt Mfg. Co., Cleveland, has resigned as president and general manager. It is understood that negotiations for the purchase of the plant have not been completed and at present a proposition has been made to another important industry in Cleveland.

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Dr. R. E. Humphries, director and vice president in charge of manufacturing of the Standard Oil Co. of Indiana, Chicago, and associated with the company nearly 33 years, has retired.

Dr. Max G. Paulus, general manager of manufacturing has succeeded Doctor Humphries as vice president; Dr. Robert E. Wilson has been made vice president of research and development; and Harry F. Glair, assistant general manager of manufacturing, has been promoted to general manager.

Trade Body Contest Open

American Trade Association Executives, 644 Drexel building, Philadelphia, through its committee on awards is receiving entries from trade associations for consideration for the 1932 award to be made to the association doing the most for its industry this year.

Obituaries

ROBERT C. HANDLOSER, manager of the Detroit office of the Motch & Merryweather Machinery Co., Cleveland, died Jan. 3 at Detroit. Born in Trenton, N. J., Oct. 26, 1875, Mr. Handloser was graduated from Stevens Institute of Technology, Hoboken, N. J., in 1898. Successively he was associated with the Western Electric Co., New York, and the Keuffel & Esser Co., Hoboken. In May, 1899, he entered upon a student course in machinery and after some time with the Brown & Sharpe Mfg. Co., Pond Machine Tool Co., Niles Tool Works Co. and others, he was appointed manager of the Vienna office and represented these firms in Germany and Austria from August, 1899, to May, 1901.

From May, 1901, to May, 1902, he represented the Vienna steel firm of Bohler Bros. in England and during the next year, in this country. From May, 1903, to June, 1905, he was in charge of the New York office of the Dilworth Porter Co. Returning to Europe, he again represented the Pond and Niles companies and the Pratt & Whitney Co. in Germany and Austria. In April, 1907, he joined the Motch & Merryweather organization and, until his death, was in charge of the Detroit office of the company, of which he also was a director.

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Harry B. Dow, 54, assistant secretary and purchasing agent of the Waterbury Clock Co., Waterbury, Conn., died Dec. 26.

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William H. Haws, 79, a member of the family which founded the Haws Refractories Co., Johnstown, Pa., died at Johnstown, Jan. 4.

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W. C. Clark, 82, formerly associated with the New Process Iron & Steel Co., Noblesville, Ind., died Dec. 18.

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Frank H. Kohlhase, founder and president of the National Stamping & Electric Works, Chicago, died Dec. 27 at St. Petersburg, Fla.

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Henry E. Rose, 50, owner of the Stamford Iron Works, Stamford, Conn., died in that city Dec. 27. For 16 years Mr. Rose was with the Stamford Rolling Mills before taking over the iron works about 18 months ago.

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Isaac H. Milliken, vice president of McConway & Torley Co., Pittsburgh, manufacturer of steel castings, died at Pittsburgh, Dec. 30. He was born in Pittsburgh 60 years ago and joined the McConway & Torley Co. when a youth and had been identified with the company continuously since. He was a member of the Duquesne club, Pittsburgh, Manufacturers' Club of Philadelphia and the Machinery Club of New York, among other affiliations.

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Frank N. Brown, 75, at one time treasurer of the Columbus Mill & Mine Supply Co., Columbus, O., of which his father, John W. Brown, was the founder, died Dec. 21. He retired in 1912 after the company was reorganized as the Brown Steel Co.

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Norman G. Fergusson, of Fergusson, Wild & Co. Ltd., well known iron ore merchant of Great Britain, with offices in London, Middlesbrough, Glasgow, Paris and Duesseldorf, died Dec. 28. His company was represented in the United States by William W. Hearne, Philadelphia.

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Philip A. Schwab, 70, founder and president of the Schwab Boiler & Machine Co., Milwaukee, died Dec. 27. He was born in Hebron, Wis., and settled in Milwaukee in 1876. In 1896 he organized the Centennial Machine & Iron Works, which he operated until he organized the present concern in 1918.

Sheet and Tin Plate Mill Wages Unchanged

Wage rates in sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged in January and February, the average sales price of Nos. 26, 27 and 28 gage black sheets holding at 2.30c per pound in November and December. The average for the year 1932 is 2.31c, compared with 2.49c for 1931 and 2.84c for 1930. Monthly comparisons follow:

	1932	1931	1930
Jan.-Feb.	2.40c	2.60c	3.05c
March-April	2.30c	2.65c	2.90c
May-June	2.30c	2.50c	2.90c
July-Aug.	2.30c	2.40c	2.75c
Sept.-Oct.	2.30c	2.40c	2.75c
Nov.-Dec.	2.30c	2.40c	2.70c
Yearly average	2.31c	2.49c	2.84c

Soviet Cites Growth

Relating the development of Russia in the past 15 years, the USSR chamber of commerce points to the production of pig iron as 4,200,000 tons in 1913, 1,300,000 tons in 1925, 4,900,000 tons in 1931 and 4,500,000 tons in nine months of 1932. Output of ingots for the same periods is given as 4,200,000, 2,200,000, 5,300,000 and 4,400,000 tons. Production of finished rolled steel, also for the respective periods, is 3,500,000, 1,500,000, 4,000,000 and 3,100,000 tons.

EDITORIAL

Legislators Should Speed Bankruptcy Reform

ONE of the unfortunate aspects of the present period is the certainty that a large number of industrial concerns which have struggled bravely through three years of hardship will be forced to give up in 1933. Many of them could have discontinued business voluntarily in 1929 or 1930 and a few in 1931 and still would have had something left for distribution to the owners. By hanging on tenaciously these companies have slowly used up their resources and now are on the point of having to give up the struggle, with painful losses to their owners and to creditors.

The fact that bankruptcies, receiverships, failures, etc., in industry will continue in great number until the country is well on the way to recovery gives point to the present movement to revise the bankruptcy laws. Authority to establish uniform legislation governing bankruptcy is vested in the congress of the United States. Therefore it is within the power of that body to make revisions in existing laws, which, in the opinion of many competent experts, are inadequate.

Under Existing Laws Minority Creditors Can Exercise Excessive Demands

According to existing procedure, when a company or individual is unable to meet obligations, any three creditors are entitled under present laws to demand liquidation. This provision leads to many abuses, the most common of which is for small or unimportant—or in some cases disgruntled—creditors to insist upon liquidation when such action in fact is not the best course to pursue. In case the creditors are upheld, the company goes into bankruptcy and the only way by which the old management can continue the business is by raising enough money to buy in the assets.

Numerous other abuses could be enumerated, but the main point is that bankruptcy under existing legal provisions permits injustices that are particularly harmful in a period of depression.

To correct the weak spots in existing laws, it has been proposed that provision be made so that if a debtor company or individual cannot meet current obligations, that debtor may present in court a petition for relief, but instead of appointing a receiver, as in present procedure, the court would ask the plaintiff or plaintiffs to obtain from two-thirds of the secured creditors and from two-thirds of the unsecured creditors approval for reorganization. It is proposed that minority creditors be given a hearing, and if it be deemed necessary, their claims can be satisfied by continuing liens in proportion to their holdings or by the sale of these holdings at a reasonable price, if such is obtainable.

Proposed Revisions Would Preserve Earning Power and Curb Present Abuses

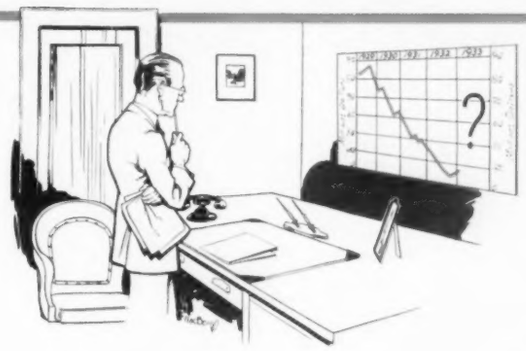
The obvious advantages in this proposal are that expensive receiverships in many instances could be avoided and—more important—minority creditors could not block a reorganization. In its broader aspects it would permit the debtor to continue to operate and to preserve his earning power and at the same time would give full opportunity for the adjustment of proper claims against the business.

Another advantage of the proposed reform is that it provides for the settlement of obligations, or for their payment ultimately, rather than for the reckless and many times unnecessary dissipation of valuable assets. When a bankrupt concern is bought in at a few cents on the dollar and is operated by new management unburdened by legitimate overhead, it in reality becomes a menacing raider of competing businesses which have remained solvent. Therefore it is to industry's benefit that bankruptcies be confined to those companies which have no possible hope for continuing under present conditions.

Reform in bankruptcy along these lines is favored by numerous individuals, organizations, corporation attorneys and public officials who have studied the matter carefully. Industry should be particularly interested in it because it promises a measure of protection against certain abuses, which, unless checked, will cause considerable harm to business generally in the present period of abnormally high mortality in business.

Executives of industrial companies should acquaint themselves with the provisions of the proposed laws and should take an active part in encouraging congress to act promptly and intelligently on the matter. Corrective legislation on bankruptcy can be of greater service in the near future than in times of normal business volume.

THE BUSINESS TREND



Solution of Debt Problem Essential To Recovery

BUSINESS has advanced a few steps in a new year which promises to bring important developments in the world's struggle to free itself from the depression. In the United States, 1933 starts out under auspices somewhat different from those obtaining at the beginning of 1932, yet the fundamental problems have changed only slightly.

A year ago the financial situation was alarming. Bank failures, hoarding, etc., were outward evidences of a condition that came very near to being a panic in every sense of the word. Today the financial structure is sound, as far as banks are concerned. Bank failures have been reduced to a small number. The danger of another drive on the American dollar seems remote.

Now concern has shifted from the threat of a monetary crisis to the very serious problem of debts. The mountain of past obligations is beyond the ability of many individuals, corporations and local governments to pay out of present income. Practically every effort to refinance obligations of major importance by extending the period of payment sooner or later finds its way to the government. Washington already has provided many hundreds of millions of dollars to save institutions from insolvency.

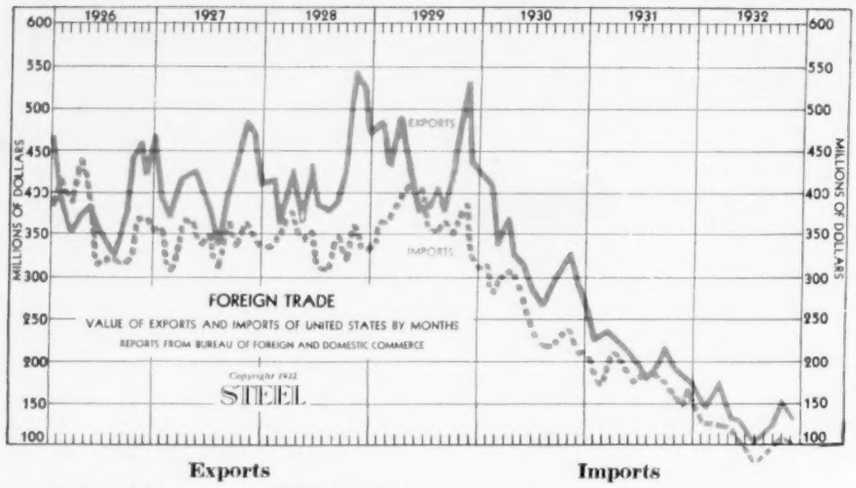
The debt problem probably will dominate economic debate and action in 1933. It will involve greater intensity in the controversy between the inflationists and the deflationists. Taxes and mortgages will assume the aspect of problems of grim reality rather than of academic concern and interest as they were early in 1932. The pressure that something be done will add fuel to the argument for and against a manipulated currency. The discrepancy between the buying power of the farm dollar and that of the urban dollar will be studied more carefully.

Painfully Slow Working Out of Debt Burden Retards Business Recovery

The mere uncertainty arising from these unsettled problems perhaps is the greatest hindrance to business recovery today. The sooner the public begins to see progress in the debt situation, the sooner will business be free to go forward with greater confidence.

1932	
Nov.	65
Oct.	66
Sept.	66

1931	
Nov.	73
Oct.	73
Sept.	75



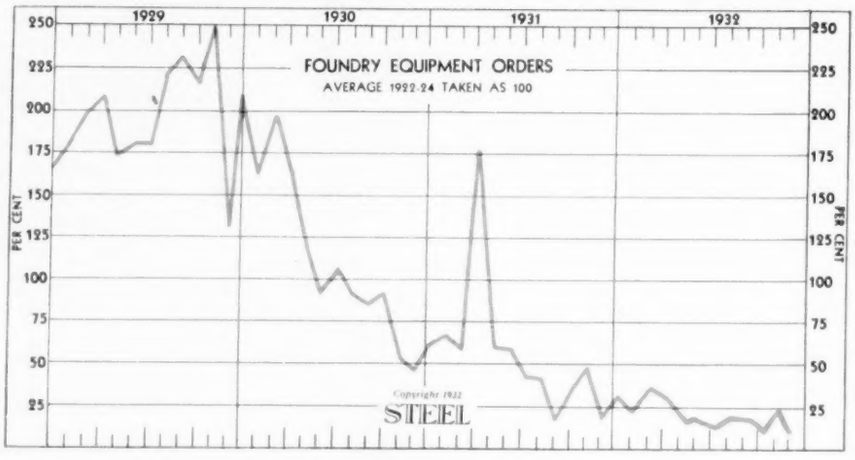
Exports		Imports	
Nov., 1932	$139,000,000	Nov., 1932	$104,000,000
Oct., 1932	153,470,000	Oct., 1932	105,500,000
Nov., 1931	193,000,000	Nov., 1931	149,480,000

November Trade Balance Reduced as Exports Fall

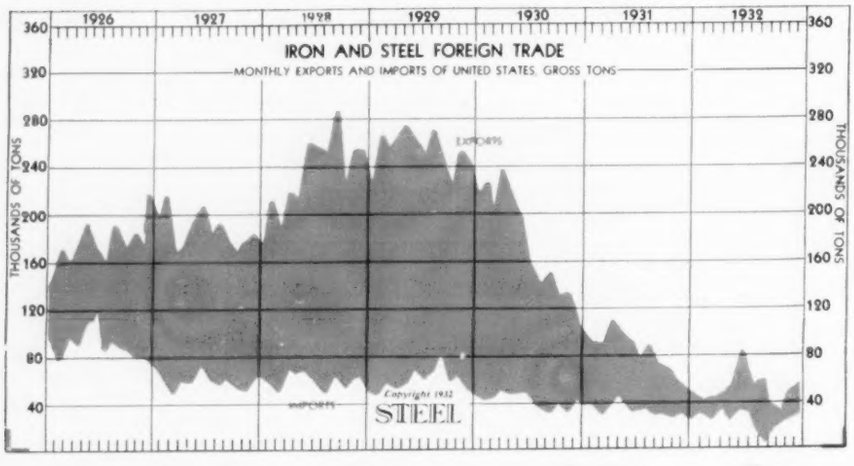
This country's foreign merchandise trade suffered the usual seasonal year-end relapse when exports for the eleventh month were valued at approximately $139,000,000. This represents a recession of $14,470,000 from the previous month. The imports of merchandise are provisionally computed at $104,000,000 in November as against $149,480,000 for the same month last year, leaving a favorable trade balance in the merchandise movement for November of approximately $35,000,000.

Foundry Equipment Orders Down in November

After an encouraging spurt in October the index of foundry equipment orders fell off sharply in November to the smallest volume since last September. The index of gross orders as reported by the Foundry Equipment Manufacturers association for November stood at 13.8 compared with 23.2 for October and 17.2 for November, 1931. The September low was 11.9. The index of shipments was 14.5, a loss from the 17.6 in the previous month. Unfilled orders dropped two points to 22.4.



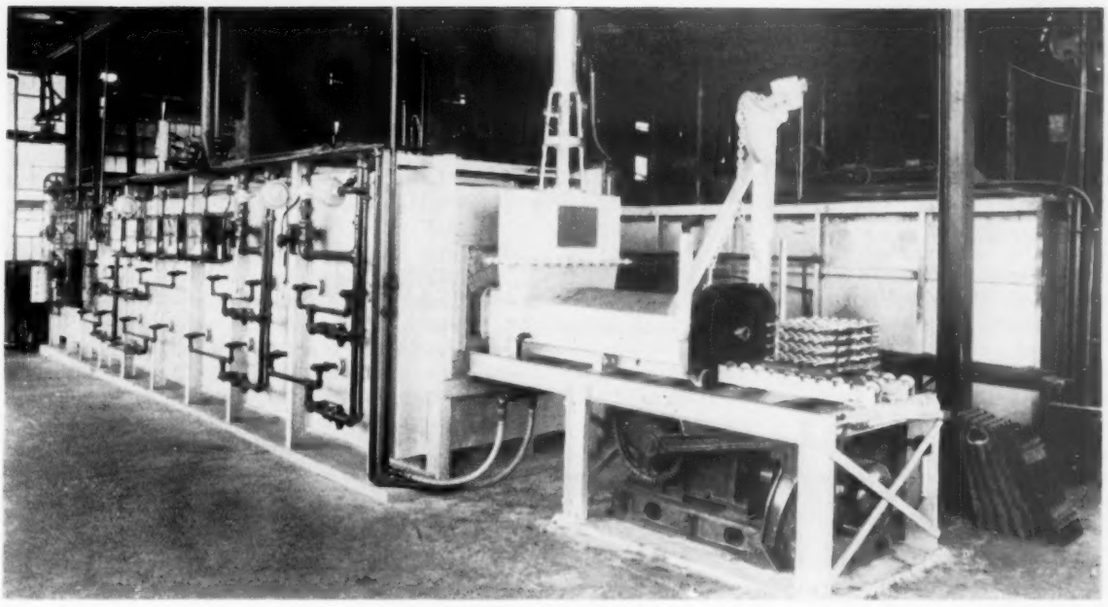
	1932	1931
November	13.8	17.2
October	23.2	45.9
September	11.9	31.9



Exports	Tons	Imports	Tons
Nov., 1932	56,041	Nov., 1932	39,924
Oct., 1932	41,226	Oct., 1932	33,693
Nov., 1931	59,335	Nov., 1931	34,658

Iron and Steel Foreign Trade Highest Since May

Both import and export trade of iron and steel products expanded in November, compared with the October volume and reached the highest level since May. Exports totaled 56,041 gross tons in November, a gain of 14,815 tons over October and comparing with 59,335 tons in November last year. Imports increased 1231 tons to a total of 34,924 tons in November compared with 34,658 tons for the same period last year.



Charging end of continuous gas carburizing furnace installed in Detroit plant of Chrysler Corp. This unit is used for case hardening camshafts

CARBURIZING BY CONTINUOUS GAS PROCESS PROVES ECONOMICAL

BY H. M. HEYN
Surface Combustion Corp.

REGARDLESS of the growth of alloy steels and special means of surface hardening, the ancient art of carburizing steel remains one of the fundamental operations in the manufacture of machine parts. Carburizing retains its popularity because it enables the workman to start with a material which can be machined easily and to finish with a suitably hard surface for resisting wear, retaining ductile metal underneath with sufficient strength and shock-resisting properties to withstand severe duty.

At the present time most carburizing is done by the time-honored method of packing the steel with carbonaceous materials in suitable containers, covering it in such a way as to prevent infiltration of furnace gases, then raising the temperature to a suitably high point, and holding at this temperature for some hours, depending upon the depth of case desired. Carburizing by this means is dependent upon a number of factors, many of which arise from the character and uniformity of the compound; great care, therefore, must be used in handling the compound to obtain satisfactory results. With present methods there are at best still many variables hard to control and results frequently are difficult to explain.

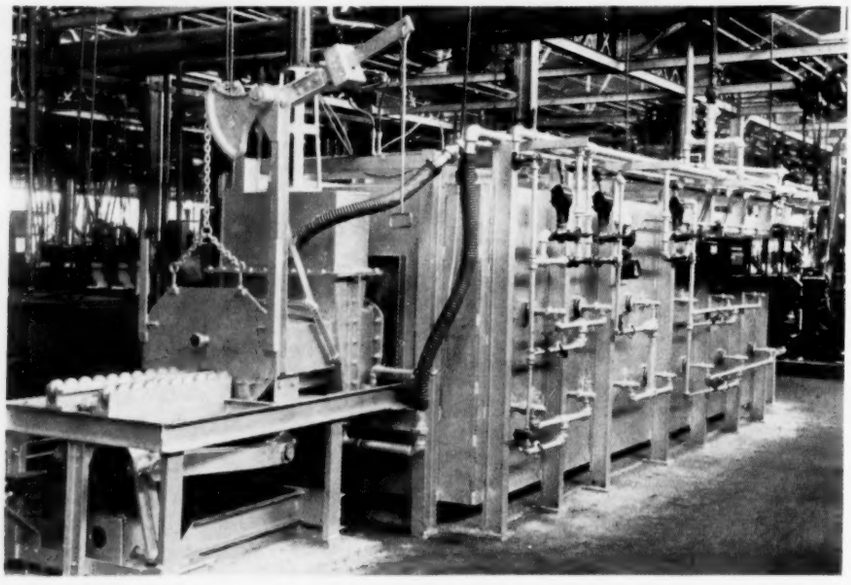
It has been felt for many years that the pack method of carburizing is too cumbersone to fit in well with modern manufacturing practice. A great deal of work has been done using an externally prepared gaseous atmosphere.

This work has been done, as a rule, in gas-

AS a means for surface hardening steel, continuous gas carburizing is gaining in favor rapidly, largely because it is proving economical and because it lends itself to conditions which demand a continuous flow of carburized parts in production lines. Several continuous furnaces for hardening automotive parts now have been in service a sufficient time to provide a basis for determining advantages of the process, uniformity of results and cost of operation. To present these facts is the purpose of this article. The author, H. M. Heyn, is sales engineer, Surface Combustion Corp., Toledo, O. The process and furnace were described in considerable detail in a previous article by the same author appearing in the June 27, 1932, issue of STEEL.

fired furnaces of the revolving type. Much has been done in studying the details of operation of these furnaces and many elaborate investigations have been carried through to clear up various details of the process. This work is voluminous in extent and constitutes an interesting chapter in the development and improvement of a very old art. There is one feature in common with all of this work in that it is done with intermittent or recurring operations, whereby the treatment of one lot of steel parts is completed before the work on the next begins.

To develop a process for continuous gas carburizing, it was necessary to go back to the fundamentals of the art and study anew the essential carburizing reactions involved in the process and develop a method of operating which would be in accordance with these fundamentals and at the same time capable of being built into a piece of commercial equipment that would be rugged in construction and simple in operation. Since it was believed that there was a demand in industry for a continuous furnace of this type, the work was undertaken and carried through from a laboratory development step by step to complete commercial installation.



Free wheeling driveshafts are surface hardened in this continuous gas carburizing furnace, the second unit of its kind to be installed by the Chrysler Corp. in its Newcastle, Ind., plant

Adapted to Mass Production

After considerable study and research in the laboratory of the Surface Combustion Corp., a process has been worked out which fits into the present-day manufacturing methods of straight-line and mass production. This is known as the Eutectrol process of continuous gas carburizing. No attempt will be made here to describe this process or furnace as both were discussed in a previous article (STEEL, June 27, 1932). This article will deal only with the results obtained and efficiencies effected with present installations of this process of continuous gas carburizing.

First Installation Year Old

The first Eutectrol continuous gas carburizing furnace was installed at the Newcastle, Ind., plant of the Chrysler Corp. in December, 1931. This furnace has a capacity of 120 steering gear worms and sectors per hour and has been in operation for a year. Some interesting results have been obtained.

A case depth of 0.035-inch is produced on the sectors and 0.040-inch on the worms. The discrepancy in case depth is due to the difference in analysis of materials used for these parts. All worms and sectors receive a 100 per cent Rockwell hardness inspection, a low limit of C-60 being specified, and occasional telltales are broken daily to check the case depth. It should be noted that the hardness on both parts has been extremely uniform, averaging C-63 to C-64 after water quenching from a tube furnace and drawing at 325 degrees Fahr. in a mesh-belt conveyor furnace. Rejections from hardness are rare and no rejections have as yet been made for case depth or character.

One very important factor in this type of work, that of distortion has been eliminated to an unexpected degree. A uniform shrinkage in the hole and overall length of the worm of about 0.003-inch has been found to occur and consequently must be considered in machining the worm. No appreciable change has been found in the sector.

This is a distinct improvement over the pack method of carburizing as distortion has been easily traceable to one of the following causes, which are eliminated entirely with the Eutectrol process: Faulty packing of parts in the carburizing box; impossibility of uniform heating of parts in a carburizing box; effect at high heats of weight of other parts and carburizing compound on pieces in the lower section of the box; shifting of parts as the boxes are pushed through the furnaces; and dumping boxes while the pieces are still hot.

The total cost of all natural gas used for both heating and carburizing is about $0.001 per pound of work. The total gas consumption is about 725 cubic feet per hour. All other charges, including labor, power, depreciation, etc., raise this total to $0.0031 per pound. This figure is extremely low for carburizing. The operation of this furnace is so simple that less than one-half of one man's time is required.

Carburizing Time Is Reduced

The time required for carburizing is reduced to a minimum with the process as a case of 0.035-inch is produced in a total time of 6.6 hours. The short time required reduces the work in process to an absolute minimum and eliminates the possibility of having the work piled up in the plant waiting the operations subsequent to the carburizing and expedites the finished product. This item is important and should be considered carefully in this age of economical operating practices.

After the first furnace had been in operation for several months and results were obtained showing without question the many economies effected with the process over the old pack method, a second furnace was installed for carburizing free wheeling driveshafts. This furnace was designed to give a case depth on this part of from 0.065 to 0.075-inch. The average free wheeling shaft has a run-out on the cup of approximately 0.004-inch after box-carburizing, with occasional instances of 0.010-0.015-inch. A run-out limit of as low as 0.003-inch was obtained on the shafts carburized in the Eutectrol furnace even after hardening. The necessity for straightening these parts was also reduced considerably.

The third installation of one of these furnaces for the Chrysler Corp. was made in the company's Jefferson avenue plant in Detroit in August, 1932. This furnace is

used for carburizing camshafts. The Timken-Detroit Axle Co., Detroit, also installed one of these furnaces for carburizing ring gears.

At a recent meeting of the Detroit chapter of the American Society of Steel Treating, attended by many of the foremost authorities on carburizing, a very interesting discussion on the Eutectrol process of continuous gas carburizing took place.

One manufacturer pointed out the fact that in its experience with carburizing furnaces it had been necessary in the past to do a considerable amount of experimenting over a period of two or three months to achieve satisfactory results. Even then, these results were not constant. It was pointed out further that the Eutectrol furnace operated mechanically perfect, giving pleasing results from the beginning,—results which have continued to be uniform and dependable. The flexibility of this installation was further commented on, as the operator can so control the atmosphere as to give an absolute control over the type and character of the case desired.

In conclusion, it can be said that the Eutectrol process of continuous gas carburizing effects the following advantages: Low installation cost; no boxes or containers; 50 per cent saving in floor space; material decrease in labor due to the elimination of packing; elimination of carburizing compound with its dust and dirt; control of depth of case; control of type and character of case; rapid penetration of case; furnace can be installed in production line; ideal for direct quenching; and greater economy.

12-Ton Roll-Changing Hook Provides Severe Test of Weld Strength

FABRICATION of a 12-ton roll-changing hook by arc welding provided a real test of welded construction at the Riverside works of the Otis Steel Co., Cleveland. This hook now is in daily use lifting weights up to 60 tons.

Roll-changing hooks are in common use in steel mills where they are lifted by a crane and used for taking rolls in and out of the mill. The arc-welded steel hook designed by the Otis engineers for their cold strip mill and shown in the accompanying illustration, had to be capable of carrying a load of 120,000 pounds, as that is the approximate weight of the largest rolls with their bearings and chucks.

Built of Welded Plates

In designing for welded construction heavy steel plate was used and the hook built of three-sided box section with the open side on the outside. Length from end to end is approximately 30 feet. The two side plates each consist of two lengths of 1¼-inch plate with strapped butt joints, the straps being placed on the inner sides of the plates. The cover plate extending the full length of the hook on the inside consists of two lengths of 1¾ inch steel, 2 feet 4 inches wide, with a strapped butt joint. A ¾-inch stiffening member was laid on top of the cover plate, extending the entire length of the curved section, and fillet welded in place on all sides.

Five diaphragm plates were inserted at intervals of about 5 feet and welded to the sides and cover plate. Wing plates or flanges, 8½ inches wide by 1¼ inches thick, were welded to the side members and extend the full length of the outside periphery. In the same plane as each diaphragm, triangular-shaped stiffeners were welded to the side and wing plates. Also in the same plane and bridging the open side of the hook, straps 8 inches wide, 1 inch thick and 2 feet 10½ inches long, are welded to the wing plates.

Eyes Bolted in Place

At the upper end of the hook a 6-inch forged eye was bolted in place for insertion of the main hoist hook used in lifting. Another eye, smaller in size, was placed somewhat below this. The auxiliary crane hook is inserted in this eye and is used by the crane operator in jockeying the assembly. At the lower end of the roll-changing hook a steel casting 3 feet in diameter was welded to the steel plate. This casting, which might be called a socket, fits over the shaft of the roll to be lifted, as shown in the illustration.

Most of the fillet welds were ¾-inch, although some were 1 inch and a few were ½-inch. Welding was done in the Otis shops by the shielded arc process, using electrodes manufactured by the Lincoln Electric Co., Cleveland. More than 1900 pounds of electrodes were required in sizes of 3/16, ¼ and 5/16-inch. The hook was assembled and the various members tack welded in place before actual joining of the plates

SEVENTY-TWO tons of steel in the air! This arc-welded steel roll-changing hook in the cold strip mill of the Otis Steel Co., Cleveland, supports a weight of 60 tons. Its own weight is 12 tons

was begun. Bends were laid by the stepback method.

So successful was the construction of this 12-ton arc-welded roll-change hook, that a similar hook, slightly smaller, and designed to carry a 90,000-pound load, also was fabricated by the same method. The smaller hook is in use at the new 72-inch continuous strip mill of the Otis Steel Co. at the Riverside works of the company.

3 Per Cent Chromium Steel Castings Combine Toughness and Hardness

EXTREME toughness or extreme hardness can be obtained readily in many steels by proper heat treatment providing only one of these properties is desired. Imparting one of these properties usually results in a sacrifice of the other. The higher the drawing temperature in a heat-treating operation, the greater will be the ductility of the metal but the lower will be its strength and hardness.

Toughness and hardness coupled with good machinability is a rare combination of properties for a steel to possess; however, tests on a recently developed 3 per cent chromium steel show all three of these properties to be combined to a marked degree. This steel was perfected by the Electro Metallurgical Co., New York.

Cast Block Is Tested

A block of 3 per cent chromium steel cast in sand and subsequently tested in the as-cast condition showed unusal toughness. The dimensions of this block were 2 x 2¼ x 5¼ inches, with one-half of the length wedge-shaped. Analysis showed it to contain 0.48 per cent carbon and 3.14 per cent chromium, and its brinell hardness, though varying somewhat throughout the section, was as high as 418.

This wedge-shaped block was fastened securely at the large end, and the small end was hammered with a 10-pound sledge, the blows being directed toward the vertically upturned thin edge. A husky man delivered the blows with all his strength, but the metal, instead of cracking, deformed slowly and peened down without splitting. Though this test is qualitative rather than quantitative, it demonstrates the coincident hardness and toughness of this cast material.

A large Mid-Western steel casting company recently was advised that the use of 3 per cent chromium steel would solve many of its casting problems where a hard, tough and shock-resistant material was desired. Shortly afterward this company reported that the results so far obtained had been gratifying. Their material analyzed as follows:

	Per cent
Carbon	0.36
Silicon	0.23
Manganese	0.41
Chromium	3.00

When oil quenched from 1650 degrees Fahr., test specimens taken from castings had a brinell hardness of 477; when annealed they had a hardness of 163. A draw of 1100 degrees Fahr. following the oil quench resulted in the following physical properties:

Tensile strength, pounds per square inch	146,900
Elastic limit, pounds per square inch	109,500
Elongation in 2 inches, per cent	10.0
Reduction of area, per cent	29.9
Brinell hardness	280

The coincident hardness and toughness of 3 per cent chromium steel results in the material being extremely abrasion-resistant. In the rolled condition it is being used for rails in which strength, toughness and wear resistance are of utmost importance. The unique combination of toughness, hardness and good machinability of 3 per cent chromium steel indicates its suitability for many applications.

Steel Founders Line Up Program for Annual Meet

Details of the program for the annual meeting of the Steel Founders' Society of America, to be held at Statler hotel, Detroit, Jan. 19, have been announced. The morning session will include members' reports on the condition of business; report of a special committee handling preparation of a booklet dealing with design, manufacture and use of steel castings. report on the revision of operating data reports; report of the technical research committee; address by Arthur Simonson, the Falk Corp., Milwaukee, president of the society; and the appointment of nominating committee for 1933 officers.

Following a luncheon a second general session will convene. Program for the latter includes the report of the society's managing director, Granville P. Rogers, New York; a paper by F. A. Melmoth, Detroit Steel Casting Co., Detroit, presenting a comparison of advances made in technical production processes as against similar progress in merchandising and distribution methods; report of the nominating committee; and election of officers.

Opportunity will be offered to steel founders in attendance to visit meetings and exhibitions of the Highway and Building Congress which is being held in Detroit the entire week of Jan. 16 and in which practically all national associations in the contsruction and road building industries are participating.

Road Material of Steel Developed in Austria

A "zig-zag" steel grating road material, costing about 15 cents per square foot and requiring no maintenance for 20 years is claimed to have been perfected in Austria, according to a report to the department of commerce, Washington, from Trade Commissioner I. H. Taylor, Vienna. Austrian terminology for the material is "stahlrost-Strasse," literally, steel-grating road. The new method of construction affords zig-zag steel strips 1 inch wide and about 0.16-inch thick, welded or bolted 2 inches apart in upright position to bed strips of steel. These shop assembled units range from 32 to 48 square feet and weigh approximately 3 pounds per square foot.

This type of surfacing, it is stated, is best suited to meet the needs of countries, as in Western Europe, where the highway network is sufficiently complete but requires only surface improvement to satisfy the economic demands of heavier traffic.

The "stahlrost" sections laid in place and bolted together are covered with a fine gravel or other similar loose mixtures having a bituminous binder which will prevent oxidation of the steel strips. No tamping or other special pressure application is necessary to complete the fill-in process, as the filler is spread about 1 inch above the steel ribs and is worked in under normal traffic conditions. It is claimed that a crew of six or eight workmen can lay the grating at the rate of 1 yard in 5 minutes on a 20-foot road.

Plan Ceramic Meeting

The American Ceramic society will conduct its annual convention in Pittsburgh, Feb. 12-18, with headquarters in the William Penn hotel. In connection with the meeting, an exhibit of ceramic displays will be setup in the hotel ballroom and will be open for inspection daily.

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part IV—Mechanics of the Roof

(Fourteenth Article of Series)

CONSIDERED as an arch the roof of an open-hearth furnace is an inverted equilibrium polygon and is three-fold statically indeterminate. Knowledge covering the relation of stress distribution is lacking because of the deformation of the silica brick as used in open-hearth roofs and their abutments. In the absence of this information, it is possible only to consider the arch as with an equal distribution of stress throughout the cross section. This method, therefore, is followed.

The first consideration of open-hearth roof design is its elements as an arch shown in Fig. 26, and in the related data of Table XXXIX. In this it will be noted that the rise of the roof, per foot of chord, κ is given within the limits of 1½ to about 3 inches. These limits are established, and only within them will the arch of an open-hearth furnace be stable. To be stable the line of resistance within the arch and throughout the entire length of the arc must ever fall within the middle third of the profile. Where the rise is less than 1½ inches the line of resistance moves upward and out of the middle third towards the skewback and the roof tends to fail by excessive compression within its own body. When the rise is over 3 inches the line bends downward and out of the middle third towards the skewback and compression tends to cause the brick to buckle upward and apart unless the roof is carrying a superimposed loading which never is present in the case under discussion.

Graphic Methods Are Tedious

The determination of the actual line of force in an arch is best accomplished by graphic methods but is a tedious and exact proceeding. Inasmuch as it definitely can be stated as a result of the solution of numerous cases that any arch having a rise within the limits shown in Table XXXVI and of sufficient depth will be stable, a discussion of the method of determination is omitted.*

The correct thickness of the roof of an open-hearth furnace with reference to the roof span has in the past apparently been considered as of no particular importance. The depth of the masonry arches of architecture long has been considered of major import in their design and the stability and strength of this type of structure is a lasting endorsement of the methods of design employed. A number of formulae have been developed bearing on this important point of which Trautwine's is given general acceptance.

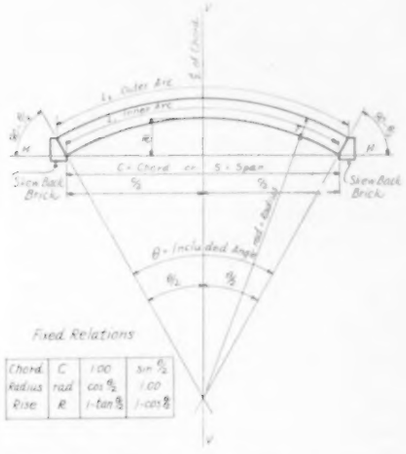


Fig. 26—Elements of the roof arch

In Fig. 27 Trautwine's formula has been reduced to a curve to span the

*Those who care to examine or study the method of the determination of the line of force in arches are referred to "Kidders Architects and Builders Handbook," 17th edition, page 311.

Table XXXIX

Certain Factors of Arch Design As Applied to Open-Hearth Roofs

Length of Chord = 1.0

Roof rise* κ a	Radius* rad b	INCLUDED ANGLE Degrees θ c	Part of circle d	LENGTH OF ARC* Inner* L_1 e	OUTER* L Thickness of Roof Brick, Inches—T 12 f	13½ g	15 h	16 i	18 j	20 k	22½ l
1½"	1.0625	56.145	0.15580	1.0420	1.1370	1.1500	1.1620	1.1720	1.1870	1.2030	1.2230
1.608"	1.0	60.0	0.16660	1.0472	1.1519	1.1670	1.1781	1.1867	1.2043	1.2269	1.2435
1¾"	.93	65.04	0.18062	1.0560	1.1690	1.1840	1.1970	1.2080	1.2270	1.2450	1.2700
1.95"	.851	72.0	0.20000	1.0681	1.1938	1.2095	1.2252	1.2357	1.2566	1.2713	1.3038
2"	.8333	73.74	0.20480	1.0750	1.2040	1.2190	1.2350	1.2460	1.2670	1.2890	1.3160
2.182"	.7775	80.0	0.22220	1.0850	1.2280	1.2430	1.2600	1.2715	1.2950	1.3170	1.3480
2¼"	.7604	82.225	0.22815	1.0900	1.2350	1.2500	1.2700	1.2780	1.3060	1.3290	1.3600
2.492"	.7075	90.0	0.25000	1.1113	1.2684	1.2880	1.3077	1.3208	1.3469	1.3730	1.4059
2½"	.7042	90.48	0.25133	1.1120	1.2699	1.2897	1.3094	1.3226	1.3489	1.3752	1.4081
2.675"	.673	96.0	0.26660	1.1265	1.2945	1.3155	1.3360	1.3520	1.3780	1.4065	1.4410
2¾"	.66	98.425	0.27293	1.1320	1.3040	1.3250	1.3460	1.3605	1.3890	1.4180	1.4530
3"	.625	106.26	0.29488	1.1460	1.2745	1.3581	1.3816	1.3971	1.4288	1.4601	1.4995
3.057"	.618	108.0	3.30000	1.5850	1.3440	1.3666	1.3900	1.405	1.4360	1.4675	1.5060

*To find the total roof rise the radius or the length of arcs, multiply the actual length of the chord by the appropriate factor of the table.

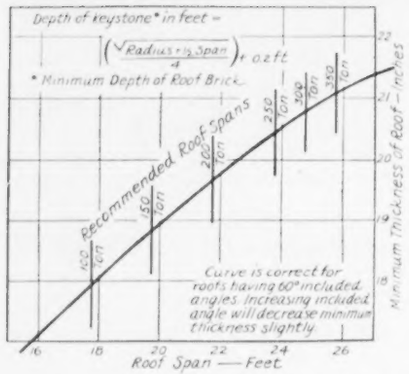


Fig. 27—Trautwine's formula for minimum arch thickness as applied to open-hearth roof design

usual limits of open-hearth furnace practice. This indicates that the roofs of accepted practice are not thick enough to secure the maximum measure of stability and strength. Possibly the insufficient thickness of the roofs of the past has been due to the inability to manufacture satisfactory silica roof brick of sufficient depth to satisfy the requirements of the theoretical depths. Some operators may consider roofs of 18 inches, or perhaps even less, thickness too deep for satisfactory service and that the under face of a deep roof will fuse until such a lesser depth is reached that a thermal equilibrium is developed. In this event radiation losses through the roof brick will be sufficient to maintain the hot surface without further fusion.

Fusion of the hotter surface is frequently experienced, but to attribute it to temperature as such is but one more fallacy of the practice. Such a line of reasoning is without merit and such a reaction can be charged only to improper firing. The successful operation, with only normal loss of thickness, of roofs that are insulated and operate with hot surface temperatures much higher than are found in any uninsulated silica brick roofs, prove most conclusively the faultiness of such a premise.

Thicker Roofs Gain Favor

The more general use of the 18 to 22½-inch ribbed roof is developing data decidedly in favor of the thicker roof and this taken in conjunction with improved brick manufacturing methods possibly justifies the prophecy that before long roofs of such a thickness as may be indicated by theory will be installed to the still greater economic benefit of the operation.

In the past it has been the practice to specify the rise of the roof in inches and quarter fractions which causes the skewback angles to be of odd degrees and fractions. This has worked no particular hardship on the engineer or draftsman, but causes a real hardship in the manufacture of the skewback brick and in erection in the field where in both cases the workmen have but the simplest tools that ordinarily are not capable of exact setting. The best practice is to work to an included angle of even degrees, preferably 60 or 72 degrees for open-hearth roofs, which, through giving a roof rise in odd figures, has the added advantage of dividing the arch ring into simple parts of a circle, 1/6 and 1/5 respectively. The foregoing is in itself a small matter, but attention to such detail is in line with the present day trend to simplify manufacture and construction.

Calculating the line of resistance in an arch as the first step in the determination of the reaction lines and forces at the face of the skewback brick is unnecessary. These may be determined with the roof weight, the length of the chord, the radius, the rise of the arch, and the included angle available.

Roofs of open-hearth furnaces are of two types, the first being the simple arch in which the chord is horizontal and consequently the skews or abutments at the front and rear are both at the same elevation. In this type of

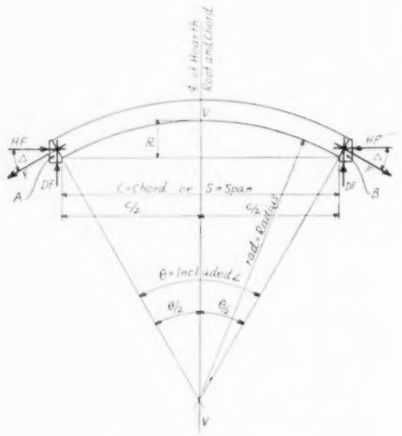


Fig. 28.—Factors in horizontal roof design

roof all reactions are the same at both skewbacks. In the second type now usually inherent in furnaces with full sloping backwalls, the chord is not horizontal, but is angled from a high point atop the front wall, downward to a lower point atop the back wall.

In the first type, a vertical line through the highest point in the arc bisects the included angle and chord and, accordingly, the angles at either side of the vertical line are one-half θ and the chord is divided equally. With the second type a vertical line through the highest point of the arc divides the included angle, the chord and the span into two segments of unequal characteristics. This design materially alters the reactive values. On this account, the reactions at the ends differ, and the determination of the reactions, while similar to the first type require double the calculation.

The values of the forces in the simple arch roof, Fig. 28, as applied to an open-hearth furnace and which are to be transmitted in each skew system, may be found with considerable and sufficient accuracy by the use of the following modified equation:

$$HF = \frac{\frac{1}{2} W \times C \times K}{8 \times R} \quad \text{.....(7)}$$

in which

HF = Horizontal thrust in pounds.
W = The weight of the roof in pounds.
R = Rise of roof in feet ($C \times \kappa$).
K = A coefficient (2.0) as later discussed.

(To be continued)

Iron and Steel Employment Up Slightly in November

November employment in the iron and steel industry increased slightly compared with October, according to the bureau of labor statistics, department of labor.

Reports received by the bureau state that the employment index number for the iron and steel industry for November was 53.2, compared with 53 for October and 62.5 for November, 1931, taking 1926 at 100.

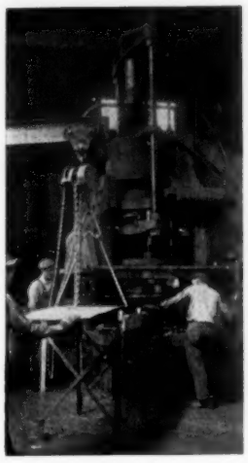
November employment index number for the cast iron pipe industry was 30.1, compared with 29.6 for October and 49.7 for November of last year, while in the machine tool industry November employment was 30.5, compared with 29.6 for October and 50.2 for last November.

In structural ironwork the employment index for November was 40.3, against 41.2 for October and 63.7 for November, 1931. In iron and steel and their products, not including machinery, the November employment index was 53.2 for October 53.1 and for last November 64.6.

How 87 Companies Make Each Employe a Salesman

During a period when one of the major problems of business has been to maintain revenue, many companies have developed plans for using their "nonselling" employes for sales work. A digest of the employe-selling experiences of 87 retail, wholesale, service and manufacturing organizations using plant, office and other employes to get business, is presented in a 48-page report entitled *Selling by Employes*, published recently by the policyholders service bureau of the Metropolitan Life Insurance Co., 1 Madison avenue, New York.

Making the Most of



METHODS AND MATERIALS

POWDERED metallurgy, utilizing metals in the powdered rather than molten states, is commanding attention. The new method not only makes possible the manufacture of oilless bearings of heavy load carrying capacity but the fabrication of other machine parts from common alloys. Mixtures of metals which would be difficult to pour because of their difference in melting points or their chemical reactions have possibilities when processed in powdered form. Processing is performed by mixing, briquetting, heat treating and finishing. Heat treating is carried out by the sintering method which means that the temperature exceeds the melting point of only one of the elements. One advantage of objects made by this method is their lightness, for inasmuch as the finished part is in effect a metal sponge, its specific gravity is considerably less than solid metal, though with almost no difference in strength. The greatest difficulty at present is the making of large objects.

$ $ $

A manufacturer of hand tools is chromium plating these products. Incidentally, this is a line of tools made to sell at depression prices. The chromium plating is done at small expense and increases the salability of the tools by giving them a longer shelf life.

$ $ $

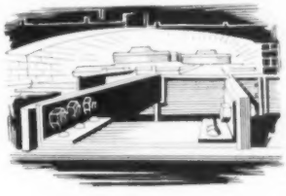
IN APPLYING porcelain enamel to gray iron castings, one manufacturer ran into a series of soft spots in the surfaces of the castings which upon examination proved to be lead. At first it was thought that these lead spots were coming from the enamel, but upon checking back they were found to be in the iron and were traced directly to the type of scrap used. The company was using a heavy scrap and in it there proved to be a number of bearings of babbitt metal. It was generally believed that lead would not come through from the cupola with molten iron, but it did in this case and caused considerable damage.

$ $ $

Collets used in automatic and semi-automatic machines for holding bar stock usually are subjected to severe abrasion, for the repeated clamping and unclamping rapidly wears the collets smooth along their burred gripping edges. With a view to longer life, one manufacturer has developed collets with inserts of stellite. On one operation where a hardened steel collet lasted only 14 hours, it is said that the insert-type has a minimum life of 1000 hours. Some have lasted 2000 hours.

$ $ $

An instrument has been developed recently which automatically regulates the fuel and air in gas burning equipment in the proper ratio to maintain a given flue gas composition regardless of the variation in B.t.u., specific gravity, chemical constituents of the fuel or the variation in the air. This instrument can be applied to condition any gas or mixture of gases so that they will preserve a constant combustion. The more and more exacting conditions of heat processes necessitate a closer and closer control of the fuel source.



$ $ $

Heavy galvanized pipe resists sea water successfully and is used extensively at ocean water crossing of natural gas pipe lines. Until recently, however, welding of the joints was avoided because it was difficult to protect the area of galvanizing burned off by the welding operation. This difficulty has now been overcome by spraying molten zinc on the joints to regalvanize. In the case of a 12-inch diameter line so treated recently, from 0.010 to 0.015 inch of zinc was applied, requiring per joint about ½ pound of ⅛-inch wire, 2 cubic feet each of oxygen and acetylene, 2 minutes for spraying and 2 or three minutes for sand blasting.

$ $ $

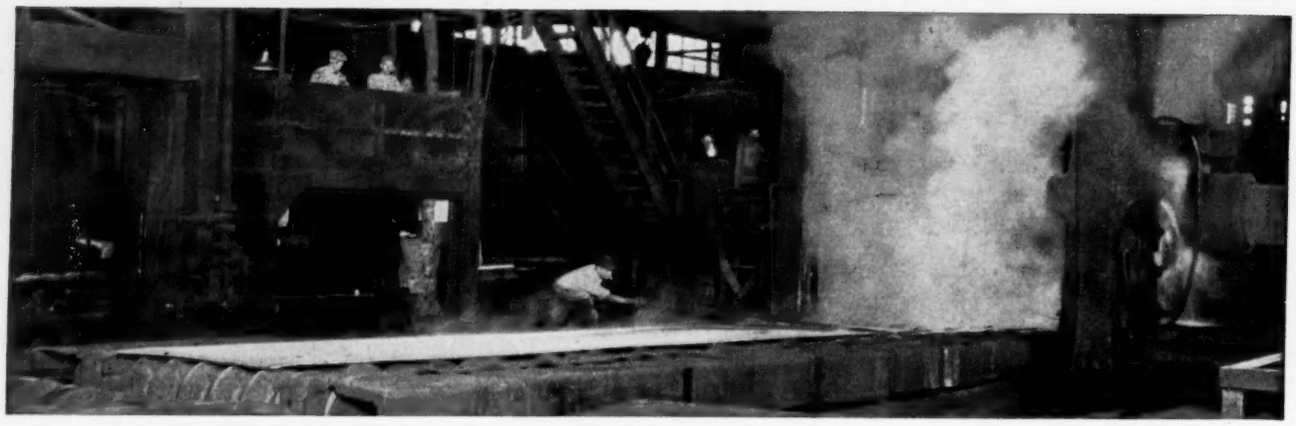
Comparing the electrodeposition of rubber with that of a metal like nickel, a plating technologist states that with the same current density and time, 68 times as much rubber will be deposited as nickel.

$ $ $

TERNE plate—a mild steel dipped in lead—is used widely for automobile gasoline tanks. For approximately two years, a large automobile manufacturer made efforts to determine the best device which would produce satisfactory electric resistance line welds on this metal at an economically high speed. The final decision was to install a number of thyratron panels to control welders performing this operation. A decided increase in speed was obtained with a high percentage increase in acceptable tanks.

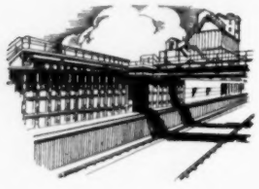
$ $ $

With salt baths used in heat treating, the temperature range for tempering is from 300 to 1100 degrees; for hardening, from 1200 to 1700 degrees Fahr. In the latter case a magnetic detector type of control sometimes is used. An electrically-excited coil of wire, distinct from the heating elements, is built into the walls of the pot. When a charge of steel parts is placed within the pot, this charge becomes the core of the coil, thus becoming magnetized, and the degree of magnetization is recorded on a dial. When the temperature of the steel reaches approximately 1400 degrees Fahr., it passes through its critical point and is ready to be quenched. At the critical point, the steel becomes nonmagnetic, thus the indicator registers zero and serves as a reliable guide for removing the steel from the bath.



PROGRESS IN STEELMAKING

MANY problems involved in the cold rolling of flat material have been solved at a plant in Ohio equipped with an experimental 4-high mill. The work rolls are driven by separate motors designed for a wide range of speed. The screwdown is equipped with instruments for recording the pressure exerted by the rolls and facilities also are available for quick reading and recording of speeds, drafts, horsepower, tension, etc.



BLAST furnace gas is highly beneficial in underfiring by-product coke ovens, according to observation of a producer in the Pittsburgh district. When the ovens are fired with by-product gas the coke batch as pushed at a given average temperature is hotter at the bottom and cooler at the top. Blast furnace gas, however, imparts a hotter temperature to the top and a cooler temperature to the bottom, just the reverse of by-product gas heating, thus effecting a more uniform temperature throughout the oven.

♦ ♦ ♦

Sheet bars from the piler of a continuous mill in the Pittsburgh district now are handled faster and cheaper by the use of a rotating device suspended from an overhead crane hook. The device includes a girder and six hooks and handles 20 tons of sheet bars, 18 inches wide and 30 feet long, in a single lift. All work involved in loading and unloading anywhere and at any angle is performed by the crane operator. The saving in labor alone is estimated at $14,000 annually.

* * *

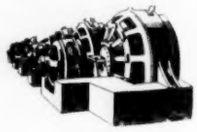
Cost of cutting mill cobbles has been reduced at the rolling department of a steel producer by equipping all welding torches with a recently developed cutting assembly. The oxygen valve is designed with a triple-thread screw and a knurled wheel, which is so arranged that it can be opened and closed quickly with the thumb. The flames automatically are evened up by the cutting tip.

♦ ♦ ♦

Pull tests up to 150,000 pounds per square inch, and compression and transverse tests using standard 0.505-inch steel bars now can be made on a newly marketed machine designed to operate from a sitting position. The indicating dial is mounted at an angle to the vertical and is tilted forward for convenient reading.

♦ ♦ ♦

A series of 38 backing-up rolls serving the top and bottom straightening rolls is incorporated in a new type sheet roller leveler developed in Germany and recently introduced in this country. The lower backing-up rolls have an adjustment that concave or convex the bottom straightening rolls.



EASTERN steel companies recently have effected savings in buying electric energy from utility companies. In the past, these power concerns have been particular about demand charges of $1 to $1.50 per kilowatt per month, in compensation for their maintaining sufficient capacity to keep themselves "in readiness to serve." In some cases, steel companies now are taking a chance on the ability of the power company to serve them. By watching their consumption and distributing their loads, they are able to obtain the power they need, and without paying a charge compensating the power company for "readiness to serve." Only energy actually consumed is being purchased.

RELEASE of material handled by lifting magnets is simplified by a newly developed controller which automatically discharges the load and disconnects the magnet from the source of power. Arcing of the contacts is eliminated and the flow of reversed current minimized, thus reducing the heating of the magnet.

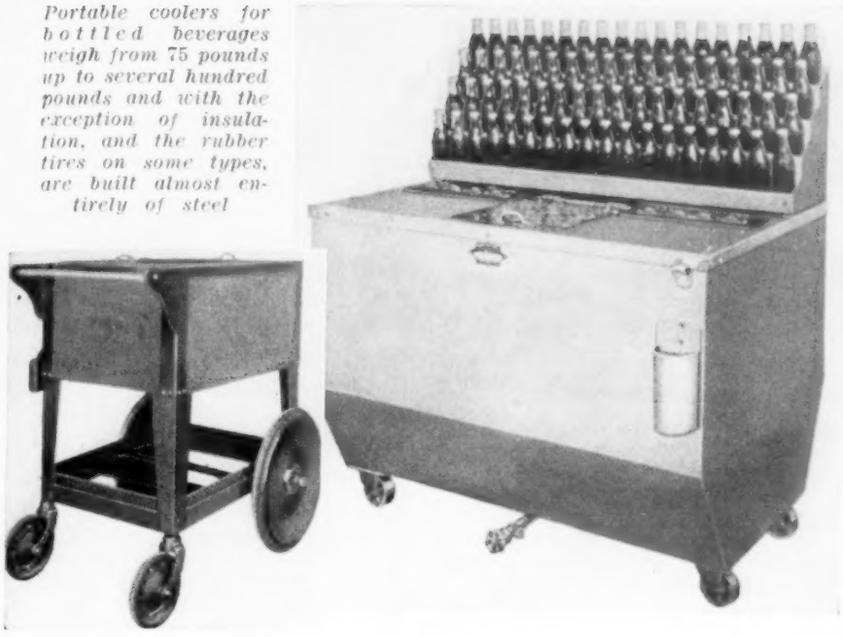
♦ ♦ ♦

Preheating fuel oil cheaply and efficiently for open-hearth furnaces is accomplished by one steel producer by the use of strip heaters properly insulated and clamped to the sides of the tank.

♦ ♦ ♦

Titanium has been found by a tool steel maker to be one of the most successful carbide forming elements. Tungsten and molybdenum in 4 or 5 per cent concentration function similarly but they fail to preserve the austenitic state of the metal. An addition of titanium equivalent to five or six times the carbon content is effective when properly utilized to reduce the susceptibility to intergranular corrosion of steel.

Portable coolers for bottled beverages weigh from 75 pounds up to several hundred pounds and with the exception of insulation, and the rubber tires on some types, are built almost entirely of steel



Large Uses of Steel In Small Ways

234th Article ◆ Bottled Beverage Coolers

CONSUMPTION of bottled carbonated beverages in the United States increased from 6,500,000,000 half-pints in 1919 to 13,000,000,000 in 1932. The American Bottlers of Carbonated Beverages, an association with headquarters in Washington, reports there are 7500 bottling plants in their industry. At the time of their annual convention and international exposition in Cleveland last fall it was stated 4000 of these establishments are within a 500-mile radius of that city.

Interviews with a number of representatives disclosed the fact the industry's growth is not attributed so much to prohibition as to mechanization. Delegates were present from foreign countries where the "noble experiment" is not being tried. In the earlier days cleaning, filling and capping bottles were hand operations, slow and in many instances unsanitary. Distribution was more difficult.

Prohibition served to increase the demand, and this led to the design and construction of automatic machines for scrubbing, washing and sterilizing bottles, mixing the beverages, filling, capping, labeling and packing. Thus the industry has become almost entirely mechanized.

The exposition was an exhibit of machinery and equipment made of steel, some parts of which featured the newer types of corrosion-resisting metals. Into the large machines bottles were "fed" by one operator as rapidly as he could; the bottles were conveyed automatically to the various "departments," and issued as fast as another man could take them away, ready for the market—a complete bottling "establishment" in a unit about the size of an average living room—doing the work formerly required of many men.

Leads to Greater Production

As an offset to this labor-saving factor—to which "technocrats" might point as an evil—this mechanization has led to a far greater production, a vast distribution system, and has made it easy and profitable for countless thousands of small merchants to sell bottled beverages, unquestionably affording more employment than if mass-production had not been resorted to, in order to fill an important demand.

As regards one detail, this development has required an annual production of 150,000 to 200,000 dispensing units, mainly of the size and class as those used by corner-merchants, small restaurants, gasoline stations which serve refreshments, and park stands. Bottled drinks must be kept cool with ice or mechanical refrigeration, and they must be readily accessible to customers. Therefore, approximately 10,000 tons of steel, according to estimates by the equipment manufacturers, is consumed annually in the manufacture of such units.

The coolers vary in size, weight and construction details, but all have an inner and outer casing of steel, with insulation material between. In a typical unit, the two lids and top frame are made of No. 20 gage corrosion-resisting steel. The side panels are clamped with No. 20 gage steel T-shaped. Six assembly bolts at each of the lower corners are cadmium plated. The legs are of No. 16 gage steel, die formed and embossed. These legs are formed from sections stamped out of the same sheet which is used as a brace between the legs and serves as a platform for bottle cases. Heavy steel casters are cadmium plated. In place of casters, stamped steel wheels rubber-tired frequently are used, as shown in the illustration.

Styles and Sizes Vary

The height of this unit is 33½ inches, width 22 inches and length 31 inches. The inside dimensions of the chest are 18½ x 27¾ x 12 inches. Such a cooler retails at $8.50 in lots of ten; others on the market range from $6.50 to $10. Some of the larger size coolers of this type have bottle display racks, made of the same gage material as the chest or legs. The chests generally hold 75 to 100 pint bottles.

More elaborate and larger coolers and dispensers have been developed for use where there is a constant and heavy demand for various kinds of soft drinks. In some of these there are systems of wheels for gripping and holding the bottles. As one cold bottle is removed, another is inserted in its place, and the wheel in being moved around to remove and insert bottles passes them through ice water, or a mechanically refrigerated compartment.

Erect 75,000 Tons of Steel With Only 83 Accidents

Seventy-five thousand tons of structural steel was erected in the construction of the five Rockefeller Center buildings in New York, with the occurrence of only 83 accidents causing lost time out of a total of more than 500,000-man hours of work.

Post & McCord Inc., in erecting the steel work, handled column sections weighing as much as 60 tons each. Seven roof trusses having a total weight of 1400 tons were erected in the music hall without a serious injury.

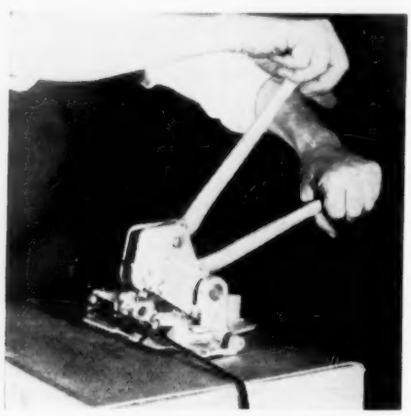
This safety record was attained through the functioning of a well organized accident prevention staff. A safety engineer and three assistants worked constantly to eliminate unsafe practices.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

New Strapping Tool Is Combination Unit

Acme Steel Co., 2840 Archer avenue, Chicago, recently introduced a single strapping tool which incorporates stretching, sealing, and cutting mechanism. In operating the combination tool, shown herewith, the seal is snapped into the mouth of the sealer and the band is inserted in the tool. One stroke of the stretcher lever tightens the band and the stroke of the sealer lever applies the seal, seals it, and cuts the band from the coil. When the operations are completed, the tool still retains the loose end of the band so that it will be at hand for the next package.



Acme strapping tool stretches, seals and cuts band efficiently

◆

Develops New Electrode for Manganese Welding

General Electric Co., Schenectady, N. Y., is introducing a new coated electrode for manganese welding, designated type W-85. This new wire finds its principal application in the building up of worn manganese steel castings to original dimensions and in the repair of such fractured parts. It also can be readily applied to obtain a manganese steel surface on parts of ordinary steel and iron, thereby giving the parts a tough, work-hardening, wearing surface at a low cost.

Additional applications of the electrode will be found in worn equipment. Considerable saving is possible through reclaiming instead of scrapping, dipper teeth, crusher mandrels, and all pulverizer parts, as well as worn parts of numerous items of equipment used in the oil fields.

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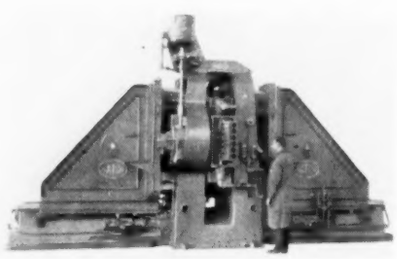
Designs Two-Way Multiple Operation Machine

National Automatic Tool Co., Richmond, Ind., recently developed a special two-way, four-headed combination drilling, counterboring, facing, chamfering, countersinking and tapping machine, shown herewith. The two large units which perform all the operations with the exception of tapping are equipped with a system of hydraulic feed which is semiautomatic in operation. Tapping heads are driven by single reversing motor drive unit and each spindle is equipped with an individual lead screw.

The machine is semiautomatic in operation and is interlocked to prevent indexing of the fixture before the heads are in correct position, and also to prevent heads from starting before the fixture is positioned correctly. Operator has complete control of the machine through one push button station. Weight is approximately 50,000 pounds.



Multiple operation unit developed by National Automatic Tool Co.

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Crankshaft Twister Handles Wide Range of Types

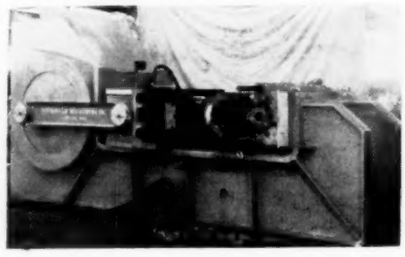
Steelweld Machinery Co., East Seventieth and Machinery avenue, Cleveland, recently developed a machine, illustrated at right, which will handle crankshafts from small fours up to cranks 72 inches long with multiple cylinders and as large in bearing diameter as may be desired. This twister is arranged customarily to make four twists at one time, but eight or more twists can be made simultaneously. Any multiple throw crank can be twisted in the machine, all pins held to commercial limits and main bearings held in line, loaded, twisted and delivered floor to floor, in less than one minute per piece.

The frame of the machine is welded, heavy rolled sections forming the ways and stress bars. Web plates and compression flanges all are welded in position to absorb stresses. In addition to the dies and actuating mechanism, this tool differs from the usual bulldozer, to which it has a surface likeness, in several respects. It carries a double ram, the rams operating independently of one another. The tool is much deeper in the throat than is usual with this type of machine. The drive comprises a 35 horsepower motor with push button controls, so arranged that the operator can start, stop and reverse the main drive by push button and control the die movement by foot pedal. All mechanisms are enclosed in the body of the tool, but accessible thru steel doors in the rear.

◆

Power Cable Jacket Resists Chemical Action

General Cable Corp., New York, under a license agreement with the Thiokol Corp., Yardville, N. J., shortly will market for electrical purposes and power lines, a cable, the jacket of which has, it is claimed, all the advantages of rubber but is superior to rubber in resistance to chemical action, fatigue, sunlight, oil, vibration and corona. Development work is already in progress to complete the adaptation of Thiokol to power cables, overhead conductors and secondary network conductors.



Crankshaft twisting machine introduced by Steelweld Machinery Co.

Carryover Puts Steel Rate Up; Bookings Slow

Operations Go to 15.5 Per Cent—Holiday Shutdowns Still Cramp Consumption—Sheet Prices Irregular—Political Uncertainty Hurts

SUPPORTED principally by output of tin plate for stock and a carryover from December of automobile needs and of miscellaneous requirements for shipment after inventory time, steelmaking operations expanded to 15-16 per cent in the week ended Jan. 7.

Bookings, however, were not the equal of production last week, for one reason because many consumers had not resumed following their holiday shutdown, and whether the steel rate lifts again this week is wholly dependent upon current orders.

The conviction that the long pull is favorable to them still is entertained by producers of iron and steel, and patently an output of 15 per cent falls short of the barest essentials, yet the industry is increasingly handicapped by a number of exterior factors over which it has neither influence nor control.

One factor is politics. Unquestionably, ignorance of the program of the incoming administration at Washington is holding back business, possibly to a greater extent than the uncertainty over the outcome of the election did last fall. The lack of railroad tonnage, so keenly felt now, is attributed in some measure to uncertainty over longtime policies.

In finished steel, demand is mediocre from every major outlet, even including the automobile. January steel requirements for this industry are fast being worked off, and February hinges upon retail sales following the shows and the Ford program, both of which still are obscure. A possible 90-day suspension in the East Texas oil field is dreaded by pipe mills.

Thus far it has not yet been reflected in orders for material, but railroad shops have resumed on an encouraging scale this month. The Reading may repair 6000 instead of 3000 freight cars, doubling its recent need for 4,000 tons of plates. The Norfolk & Western is considering rebuilding 500 hoppers. The Santa Fe has distributed track fastenings to accompany its recent rail order.

For the proposed Denver water tunnel 4000 tons of plates will be required. Bids close Jan. 11 on 5690 tons of sheet piling, 1678 tons of reinforcing bars and 9740 feet of cast iron pipe for Seattle, which has just placed a steel pipeline requiring 1800 tons of plates. Boston, incidentally, has rejected bids on 1200 tons of cast iron pipe because prices were almost $7 per ton higher than a year ago.

Raw materials appear slightly more favorable than finished. It develops that December shipments of pig iron did not fall below November, and a slight gain is probable this month. The movement of coke is maintained. Scrap, however, is a weak point, the market on steel grade being off 25 cents at Pittsburgh. The composite of STEEL eased off 8 cents this week to $6.21.

Tin plate mills are now operating at 45 per cent, an improvement of five points. Italy, which did not have a tin plate industry until three years ago, has booked some business for the Argentine.

Low as production dipped in December in both pig iron and steel it held above the all-time lows of August. Steel ingot output in December was at the daily rate of 32,485 tons or 15.02 per cent of capacity, compared with 39,031 tons in November. The 1932 total for ingots is 13,095,727 tons, compared with 25,192,715 tons in 1931. Last year was a 19.41 per cent year; 1931 was 38.13. The coke pig iron daily rate in December was 17,650 tons, or 12.5 per cent, giving the year a total of 8,674,067 tons, compared with 18,263,011 tons in 1931.

Steel prices are holding well with the exception of sheets, which have become increasingly competitive. As a result, the iron and steel composite of STEEL is off 16 cents to $28.83, and the finished steel composite 40 cents to $46.50.

Composite Market Averages

	Jan. 7	Dec. 31	One Month Ago Dec., 1932	Three Months Ago Oct., 1932	One Year Ago Jan., 1932	Ten Years Ago Jan., 1923
Iron and Steel Composite	$28.83	$28.99	$28.93	$29.32	$29.98	$41.17
Finished Steel Composite	46.50	46.90	46.74	47.64	47.28	59.01
Steelworks Scrap Composite	6.21	6.29	6.41	6.96	8.03	20.39

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Jan 7, 1932	Dec. 1932	Oct. 1932	Jan. 1932
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	17.26
Basic, valley	14.00	14.00	14.00	15.00
Basic, eastern, del. eastern Pa.	13.50	13.50	13.60	16.00
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	17.26
No. 2 foundry, Chicago	15.50	15.50	15.50	16.50
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	17.75	17.75	18.00
**No. 2X, Eastern, del., Phila.	13.76	13.76	14.16	15.76
Malleable, valley	14.50	14.50	14.50	16.00
Malleable, Chicago	15.50	15.50	15.50	16.50
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	22.29
Gray forge, del. Pittsburgh	15.63	15.63	15.63	16.63
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	79.85
Coke				
Connellsville, furnace, ovens	1.75	1.75	2.00	2.25
Connellsville, foundry, ovens	2.50	2.50	2.75	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	27.50
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	27.50
Wire rods, Pittsburgh	37.00	37.00	37.00	37.00

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

	Jan 7, 1932	Dec. 1932	Oct. 1932	Jan. 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.55
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.81
Iron bars, Chicago	1.65	1.65	1.65	1.60
Shapes, Pittsburgh	1.60	1.55	1.60	1.55
Shapes, Philadelphia	1.75	1.75	1.75	1.65
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.55
Tank plates, Philadelphia	1.69	1.69½	1.79½	1.69½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.75
Sheets, No. 24, hot ann., Pitts.	2.10	2.10	2.10	2.20
Sheets, No. 24 galvan., Pitts.	2.75	2.85	2.80	2.80
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
Sheets, No. 24 hot ann., Chi.	2.25	2.25	2.25	2.45
Sheets, No. 24 galvan., Chi.	2.90	2.90	2.90	2.95
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.75	4.75
Scrap				
Heavy melting steel, Pitts.	$8.25	8.70	9.50	10.25
Heavy melting steel, eastern Pa.	6.50	6.60	7.25	7.50
Heavy melting steel, Chicago	5.25	5.45	6.00	7.25
No. 1 wrought, eastern Pa.	6.50	6.60	7.25	9.35
No. 1 wrought, Chicago	5.00	5.05	5.60	7.25
Rails for rolling, Chicago	8.25	8.25	8.00	10.30

Sheets

Prices Easier—Black Fail to Withstand First Important Test —Automotive Orders Sustained

SHEET PRICES, PAGE 29

Pittsburgh—Sheet mill operations show no change from the 10 per cent average which prevailed during most of December. The only feature in the past week was a further retrenchment in some quarters on prices, and a consequently weaker market. Both hot rolled and cold rolled grades are being shaded, even on small lots. A few barrelmakers have closed contracts for black sheets as low as 2.00c, Pittsburgh. Demand from drummakers generally is quiet. While 2.20c is being obtained on some black sheet business, an effective advance over 2.10c is not likely under the present conditions. Galvanized sheets also are easier.

Philadelphia—The new year has brought little strength or business to the local sheet market. Autobody buying still is in prospect for early this month, but the general run of inquiry is decidedly light.

Cleveland — Automotive sheet specifications continue the most encouraging feature of the finished steel markets here, mill operations on automotive account holding around 35 per cent. Shipments will extend well into this month on releases issued late in December. Chevrolet demand is holding up. Sheetmakers express some uncertainty regarding the outlook for future automotive requirements; output has gone rapidly into cars, and backlogs for rolling do not extend much beyond ten days. Orders from barrel and pail manufacturers have improved. Action on 250 tons of sheets for the Cleveland postoffice is expected this week.

Republic Steel Corp. Youngstown, O., was awarded 1000 tons of No. 24 gage 30 x 84 inches, one pass, cold rolled pickled and annealed license plate stock for Ohio, on a bid of 2.23½c, delivered Columbus. Bids included: Youngstown Sheet & Tube Co., Youngstown, 2.42c; Superior Sheet Steel Co., Canton, O., 2.68c; Newton Steel Co., Cleveland, 2.35c; Reeves Mfg. Co., Dover, O., 2.45c; Sheet Metal Mfg. Co., Youngstown, 2.466c; Canton Tin Plate Corp., Canton O., 2.50c. Other bids ranged up to 2.78c and 2.83c.

Cincinnati—Sheet mill operations continue at practically the same rate as in early December, with specifications from automotive interests increasing in volume. Inventories are so low that most orders are for rush shipments.

Chicago—Sheet demand has changed only a little the past several weeks, the new year bringing slight improvement. Some farm implement manufacturers have increased operations moderately over the past four to six weeks. Sheet mill operations average 10 to 15 per cent. The 2.30c base price on hot rolled annealed sheets is fairly well maintained here. Galvanized sheets usually are quoted 2.95c.

St. Louis—Purchasing is restricted to small lots for immediate use. Tonnage covered by firm contracts for first quarter is the smallest for the period in a number of years.

New York—The market for sheets is easy, with business insufficient to clarify prices. An Evenal, N. J. cabinetmaker recently closed for three carloads of black sheets, and three carloads of special analysis sheets will be required for the New York courthouse for which general contract bids were opened Jan. 6. Formal orders are being placed by the New York Central railroad for quarterly requirements of No. 20 cold rolled and No. 24 hot annealed, at prices $2 a ton under published figures.

Output of the Climax Molybdenum Co., Climax, Colo., in 1932 was 1,883,000 pounds.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

*Pittsburgh, base	1.45c to 1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, delivered	1.70c
New York, delivered	1.90c
Birmingham, base	1.70c
Philadelphia, delivered	1.86c

BLUE ANNEALED No. 9-10

*Pittsburgh, base	1.60c to 1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, delivered	2.01c
New York, delivered	2.05c
St. Louis, delivered	2.04c
Birmingham, base	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED No. 24

*Pittsburgh, base	2.00c to 2.20c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, delivered	2.25c to 2.35c
New York, delivered	2.45c to 2.55c
Philadelphia, delivered	2.41c to 2.51c
Birmingham, base	2.35c
St. Louis, delivered	2.54c
San Francisco, c.i.f.	2.85c
Detroit, delivered	2.28½c

GALVANIZED No. 24

*Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, delivered	3.00c
Philadelphia, delivered	3.16c
New York, delivered	3.20c
Birmingham, base	3.00c
St. Louis, delivered	3.19c
San Francisco, c.i.f.	3.50c

AUTOBODY No. 20

Pittsburgh, base	2.55c to 2.65c

FURNITURE

Pittsburgh, No. 10 heavy	2.40c to 2.50c
Pittsburgh, No. 20 light	2.90c to 3.00c

TIN MILL BLACK No. 28

Pittsburgh, base	2.30c
Gary, base	2.40c
St. Louis, delivered	2.67½c

HEAVY COLD ROLLED No. 10

*Pittsburgh, base	1.90c to 2.00c
Gary, Ind. Harbor, base	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.31c
New York, delivered	2.35c

COLD ROLLED No. 20

*Pittsburgh, base	2.40c to 2.50c
Gary, Ind. Harbor, base	2.60c
Chicago, delivered	2.65c
Philadelphia, delivered	2.81c
New York, delivered	2.85c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.65c
Galvanized staples	2.90c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing (9-11 gage)	$55.00
(12½ gage and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.69½c to 1.79½c
New York, delivered	1.80c to 1.90c
Boston, delivered	1.92c to 2.02c
Buffalo, delivered	1.85½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Birmingham, Ala. base	1.75c
Coatesville, Pa., base	1.60c to 1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, delivered	1.94c

Structural Shapes

*Pittsburgh, base	1.60c
Philadelphia, delivered	1.75c
New York, delivered	1.87c
Boston, delivered	2.00½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, delivered	1.91c
New York, delivered	1.95c
Boston, delivered	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
Eastern mills	1.35c

IRON

Chicago, base	1.60c to 1.65c
New York, delivered	1.85c to 1.90c
Philadelphia, delivered	1.81c to 1.86c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts. billet cut lengths	1.65c
Pitts., stock lengths mill	1.50c
Chicago, billet	1.50c to 1.60c
Chicago, rail steel	1.20c to 1.30c
Philadelphia, cut lengths	1.76c to 1.86c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base Pittsburgh for one size, shape and grade for shipment at one time to one destination

10,000 to 19,999 pounds	1.70c
20,000 to 59,999 pounds	1.65c
60,000 to 99,999 pounds	1.60c
100,000 pounds and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Tin and Terne Plate

Per 100-pound box, Pittsburgh

Tin plate, coke base, cont.	$4.25
Tin plate, coke base, stock	3.75
Long ternes, 24 unassorted	2.80

Gary, Ind., base 10 cents higher

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base, 2.45c to 2.65c. Differentials to various classes of consumers

S.A.E.	Alloy Diff.		
2000	0.25	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2500	1.50	5100 Cr. spring	0.20
2500	2.25		
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.30	Cr., Ni., Van.	1.50
3400	3.20	Carbon van	0.95
4100 .15 to .25 Mo	0.50	9250 (flats)	0.25
		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. New York	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons or over	2.20c

Rivets, Wrought Washers

Struc., c.l., Pitts-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleveland	70, 10 and 5 off
Washers, c.l., Pitts. dist.	$6.50 to 6.75 off
Do., Chicago district	7.00 to 7.50 off

Rails, Track Material

Standard rails mill	$40.00
Relaying rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$30.00
Light rails, Chicago	$32.00
Angle bars, mills	2.55
Spikes, railroad, mills	2.40c
Spikes, boat, barge, Pitts.	2.65c
Track bolts, Chicago	3.50c
do., standard, jobbers	73 off list
Tie plates, Pittsburgh	$35.00
Tie plates, Chicago	$35.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-25 off
Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller ..... 75-10-10 off
Headless set screws ..... 75-10 off
Upset, larger than 1 in. ..... 75-10 off

Cut Nails, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.65
Steel sheet piling, Pitts.	1.90c

Bars

Dull Demand Continues with Alloy Product for Automotive Use Leading Soft Steel

BAR PRICES, PAGE 29

Chicago—Soft steel bar specifications have changed little. Automotive requirements continue to lead and although orders from the farm implement industry continue light, there is some expectation of better demand over the next several months. Railroad requirements are medium and specifications from miscellaneous consumers are fairly steady, occasional gains compensating for reduced purchases last month. The 1.70c, Chicago, price is fairly steady.

New York—With plants of a number of consumers closed until Jan. 9 and some not scheduled to resume until Jan. 16, commercial steel bar demand remains low and prices are easy and unchanged at 1.60c, Pittsburgh.

Pittsburgh—Except in alloy bars to the automotive trade, the bar market showed little feature last week. Mills with automotive specifications have been able to maintain higher rates than regular merchant bar mills. Reinforcing steel probably is next in activity. The base price of 2.45c to 2.65c for alloy bars continues and merchant bars generally are 1.60c, Pittsburgh.

Cleveland—Additional contracts for commercial steel bars for first quarter have been signed on the basis of 1.65c, Cleveland. Bids to the New York Central railroad which drew a quotation of 1.60c, Cleveland, are for shipments to various points, under special conditions which makers say do not represent the general market here. The volume of bar business has shown a progressive monthly improvement since last September, and with a continuation of orders from automotive interests mills are hopeful that still further advance will be registered this month.

Tin Plate Operations Increased to 45 Per Cent

Tin Plate Prices, Page 29

Pittsburgh — Tin mill operations have gained 5 points and now average 45 per cent. Several rush specifications came through last week. Most mills are now producing for stock, because customers have been slow placing 1933 estimates. A leading independent here operated last week and will continue this week at 50 per cent, and a West Virginia mill is operating at about 75 per cent. Standard Tin Plate Co., Canonsburg, Pa., resumed Jan. 3 after two weeks idleness. The base price of $4.25 for standard tin plate is firm.

New York—That Italy as a tin plate producer is becoming a more important factor in world markets is indicated by reports of the recent placing of a sizable tonnage with Italian producers by the Argentine government. Until about three years ago Italy had no tin plate industry of her own, it is said. With possibly two notable exceptions, leading tin plate buyers have contracted for the coming season. Wilco Utilities Inc., New York, has been awarded 24,080 sheets of tin plate for the Edgewood arsenal, Md., at $2715.60, delivered, bids Dec. 22.

Cold-Finished Demand Slow; Automotive Releases Gain

Cold Finished Prices, Page 29

Pittsburgh—So far in January little cold-finished bar tonnage has been released. Spark plug makers and other automotive part suppliers are beginning to specify a shade better but in small quantities. The base figure of 1.70c, Pittsburgh, for 5 to 10-ton lots is well observed. A valley steelworks started its bessemer department last week, producing for stock.

Plates

Reading Railroad May Place 4000 Tons Additional—Brewery Tanks Outstanding

PLATE PRICES, PAGE 29

Chicago—Plate demand continues quiet, and little changed from the light volume of December. Repair work at some railroad car and locomotive shops is increasing but only small plate tonnages will be required. Plates generally are steady at 1.70c, Chicago.

Boston—Depending on the type of construction, a large tonnage of heavy plates may be required for a caisson core wall, earth dam, Enfield-Ware, Mass., the Swift river water project for which the general contract has been placed with the West Construction Co., Montreal, Que. Close to 4000 tons may be needed. Demand for plates in other directions is light. Prices are untested, but there is some shading. West Springfield, Mass., shops of the Boston & Albany railroad have reopened on a four-day week schedule after a brief shutdown.

Philadelphia—Platemakers are advised the Reading railroad may substantially increase its car repair program. Originally, it called for repair of approximately 3000 freight cars and a number of locomotives. In some quarters it now is estimated that close to 6000 cars will be repaired, and that approximately 4000 tons of additional plates may be required.

New York—Plate buying by oil companies has subsided, and the market is quiet. Prices are soft, although 1.60c to 1.70c, Coatesville, Pa., usually applies on carloads.

Pittsburgh—A water tunnel for Denver will require about 4500 tons of plates and light structural material. This inquiry is outstanding in a dull market for tank plates. A large plate mill here was closed completely last week although expected to resume this week. Considerable river barge work is being figured. Tank fabricators are inactive. In this district 1.60c, Pittsburgh, appears closest to the actual market.

Cleveland—Plate fabricators are hopeful this month will bring releases on a number of projects that have been held up "until the turn of the year." Tonnage pending in leading consuming lines is not impressive, however, and the best prospects at present are for brewery tanks. Mainly on an accumulation of railroad plate orders, the local 152 and 112-inch plate mills will resume this week after a shutdown that extended through the holidays. Plates generally are 1.60c, base, Pittsburgh.

Contracts Placed

1800 tons, 20, 24 and 36 inch electric welded pipe, for Seattle, to Barde

Steel Co., Seattle; Thomas Scalzo, Seattle, general contractor.

400 tons, two tanks, Public Service Electric & Gas Co., Newark, N. J., to Dover Boiler Works Inc., Dover, N. J.

150 tons, standpipe, Hamilton Field, Calif., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

120 tons, tank, Massachusetts, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Unstated tonnage, 17,500-barrel oil storage tank for Hiway Oil Co. Ltd., Vancouver, B. C., to Dominion Bridge Co. Ltd., Vancouver.

Contracts Pending

4000 tons, estimated as required for extension of car repair program of Reading Co., Reading, Pa.; company's original program required approximately 3950 tons of plates, of which the great proportion has been placed.

747 tons, including 671 tons of medium black, 44 tons of floor plate and 32 tons of galvanized, for eastern and western navy yards; bids at Washington, Jan. 10.

700 tons, ferryboat, Virginia Ferry Corp., Norfolk, Va.; bids opened Jan. 3, with possibility of new bids being asked.

295 tons, mainly plates for buoys, lighthouse bureau, Staten Island, New York; Tippett & Wood, Phillipsburg, N. J., recommended for contract, covering 237 third class special can buoys at $25.55, f.o.b. works, and 160 third class special nun buoys, $28.20, f.o.b. works.

100 tons, or more, two steel barges, 100 x 24 x 7 feet, United States engineer, Mobile, Ala.; bids soon.

100 tons, or more, 150-gallon tank and tower, Corry Field, Pensacola, Fla.; Burford, Hale & Smith, Atlanta, Ga., low. Work also includes cast iron piping, well and pumps.

Bolt, Nut Orders Fail To Show New Enthusiasm

Bolt, Nut, Rivet Prices, Page 29

Pittsburgh—Some fill-in lots of bolts and nuts for jobbers' stock are expected to be in the market later this month. Specifications are as dull as in the Christmas week. Present light specifications take 75 off list for carriage and machine bolts generally. Rivets are nominally 2.25c, Pittsburgh. A large tonnage of bolts and rivets is expected to be supplied for cofferdams in the New Orleans Belt Line bridge.

Chicago—Bolt, nut and rivet orders are slow to improve. Small releases are being received from farm implement and automotive builders, although demand from the former indicates little change from the recent quiet rate. Jobbers so far this month have made little addition to stocks and specifications from miscellaneous consumers show no improvement. The small volume of business induces little pressure against prices, which are steady at 75 off for bolts and nuts, and 2.35c, Chicago, for structural rivets.

Cleveland—Orders for nuts and bolts are in light volume, though there are no dead spots in the market except in implement manufacture. Automotive requirements are holding fairly well, but Chevrolet has finished with its show and dealer cars and volume from this source has tapered. Rivet manufacturers report receipt of contracts for first quarter from practically all important consumers, to be specified at the same prices as prevailed in December.

Semifinished Prices Receiving Little Test

Semifinished Prices, Page 36

Few open market transactions test the $26 base price on sheet bars, billets and slabs at Pittsburgh, Youngstown, O., or Cleveland. Tin plate producers are taking sheet bars in the largest volume, but nonintegrated strip mills are not inclined to stock billets. Forging billets and wire rods are moving slowly at $31 and $37, respectively.

Railroads

Repair Work on Cars Brings Small Steel Needs, and Rail Buying Is Entirely Absent

TRACK MATERIAL PRICES, PAGE 29

Chicago — Several thousand employes are being returned to work by various railroad shops, but demand for steel has yet to reflect increased activity and this work is expected to necessitate only small steel requirements. Rock Island railroad is adding 1500 men at various shops for a ten-day duration, while the Chicago & North Western has re-employed 600 men here and the Union Pacific 400 at Cheyenne, Wyo. Rail and track fastenings releases recently have been fairly steady and rail mill operations have continued on a limited scale. New buying, however, is light. The Atchison, Topeka & Santa Fe has placed several thousand tons of fastenings to accompany its recent rail order, only several hundred tons of which, however, will be produced in this district, the remainder going to the Colorado mill. Inquiry for equipment as well as rails is absent.

New York—Car buying is entirely absent from the market. The New York Central is placing its first-half wheel requirements this week. A manufacturer's railway is inquiring for a 140-ton oil-electric locomotive.

Pittsburgh — Contrary to former years at this time, inquiries for railway steel materials are in the market. Following the routine request for prices on steel poducts by the New York Central, Norfolk & Western, Virginian and other railroads, on blanket steel needs for first quarter, there have been no specifications. Only a portion of 10,000 kegs of spikes being inquired for in 5000-keg lots each by the Atlantic Coast Line and the Boston & Maine railroads is expected to come to mills in this district. The same applies for the 3000-ton fastening inquiry by the Santa Fe. The Oakmont, Pa., mill has been fairly busy on railroad tires and recently purchased pig iron for a fair month's production. Indication is given that the 2.40c mill price of spikes is being more firmly held on present inquiries. Prospect is not favorable for early rail buying. Tie plates are $35, mill.

Cleveland—Railroads are formulating steel plans, but indicate nothing more than routine repair purchases can be expected for several weeks. Rail orders from carriers with headquarters in Cleveland will not be as heavy as in 1932. Erie and Chesapeake & Ohio are considering some commitments. Blanket contracts for first quarter for miscellaneous steel requirements have been signed in a number of instances at prices recently quoted them, these being merely protections. Attached to recent repair steel orders issued by certain lines is the notation "R. F. C." indicating the purchases are being made with Reconstruction Finance Corp. funds.

For the Cleveland Electric Illuminating Co.'s trestle at Avon Lake, O., approximately 100 tons of rails and 50 tons angle bar tie plates have been placed with a Pittsburgh district mill.

Roanoke, Va.—Norfolk & Western railroad plans to rebuild 500 of its 57½-ton hopper cars during 1933, the railroad also making changes in some box cars, designing them for single, instead of double door units.

Denver—By Feb. 1 the Colorado Fuel & Iron Co., Pueblo, Colo., expects to have close to 2000 men employed, partly because of the recent order of the Santa Fe railroad for 22,605 tons of rails and commensurate quantity of fastenings.

Structural Shapes

State Bridges Provide Bulk Of Current Business, with Fewer Postoffices, and Total Shrinking — 2700 Tons Placed for Allegheny River Locks

STRUCTURAL SHAPE PRICES, PAGE 29

New York — Structural lettings are light, led by a 1200-ton bridge. Bids are in on the federal building superstructure, New York, taking close to 10,000 tons. Additional New York state bridge tonnage goes in this week. Stanley Hunsberger, Philadelphia, bidding 6.75c a ton, is low on structural steel inspection of 2000 tons for the Albany, N. Y., postoffice.

Boston—While structural steel buying is light, pending tonnage is slightly heavier. Blakeslee Rollins Corp. here has been reccommended for the general contract for the Chelsea, Mass., lighthouse depot bulkhead, taking 435 tons of steel piling. Fresh inquiry on which general contract bids are in includes about 325 tons for Massachusetts and Maine bridges.

Philadelphia—Profound dullness prevails in the local structural market, with two orders totaling 200 tons outstanding. Seldom has there been less in immediate prospect. Action on the naval hospital here, requiring a sizable tonnage still is awaiting decision as to whether the appropriation will be increased or new bids asked.

Washington—Contract for inspection of 2700 tons of structural steel for the Jacksonville, Fla., postoffice, being fabricated by the Wheeling Structural Sheel Co., has been awarded H. C. Nutting Co., Cincinnati, at 11.5 cents a ton. Pittsburgh Testing Laboratories will inspect 750 tons for the Jamaica, N. Y., postoffice at 16 cents a ton. Material is being fabricated by the George A. Just Co., Brooklyn, N. Y. James G. Dempsey, Philadelphia, bidding 6.5 cents a ton, is low on the steel inspection, Archives building, Washington, 8000 tons.

Pittsburgh—Plain structural material is showing continued strength, and although many fabricated prices are low the minimum to even the larger fabricators is firm at 1.50c, Pittsburgh. A base of 1.60c is firm for the smaller orders.

The American Bridge Co. will fabricate at Ambridge, Pa., the 20,000 tons it was awarded for the New Orleans belt line railroad bridge main span, and the McClintic-Marshall Corp. will fabricate the 40,000 tons for the bridge's approaches at Leetsdale, Pa. Shipments will be by river.

Cleveland—State bridge work continues to predominate in the structural shape market. With the exception of 240 tons awarded for a trestle for the Cleveland Electric Illuminating Co. at Avon Lake, O., private projects generally take much less than 100 tons at a time, and few have developed recently. Cleveland interests have taken general contracts for two western New York state buildings requiring 400 tons.

Chicago—New structural steel inquiry contiues light and pending work is made up mainly of small lots. As during the past several months, awards consist principally of state highway bridges and other forms of public construction.

Contracts Placed

2700 tons, locks No. 2 and 3, Allegheny river, Pennsylvania; 2000 tons of piling to Carnegie Steel Co., and 700 tons of castings to a Pittsburgh steel foundry company.

1200 tons, state bridge RC 3409, Owego-Binghamton highway, Tioga county, New York, to American Bridge Co., Pittsburgh; Frank Lewis & Sons Inc., Bainbridge, N. Y., general contractor.

1000 tons, bridges, Susquehanna and Lycoming counties, Pennsylvania, to American Bridge Co., through Spooner Bridge Construction Co., Albany, N. Y.

900 tons, highway bridge, Marked Tree, Ark., to American Bridge Co., Pittsburgh.

275 tons, highway bridges, Colorado and Montana, to Minneapolis-Moline Power Implement Co., Minneapolis.

250 tons, tunnel structures, San Jacinto tunnel, Los Angeles county, California, to unnamed interest.

240 tons trestle for Cleveland Electric Illuminating Co. at Avon Lake, O., to American Bridge Co., Pittsburgh.

Awards Compared

	Tons
Awards, week ended Jan. 7	**7,965**
Awards week ended Dec. 31	**9783**
Awards, week ended Dec. 24	**70,663**
Awards this week in 1932	**12,333**
Av. weekly awards, 1932	**14,285**
Av. weekly awards, Dec.	**31,804**

213 tons, bridge, Big Rapids, Mich., to Whitehead & Kales Co., Detroit.

193 tons, highway work in Routt county, Colorado, to unnamed interest.

192 tons, bridge, Mt. Harris, Colo., to Midwest Steel & Iron Works Co., Denver.

150 tons, bridge, Kingfisher county, Oklahoma, to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.

130 tons, bridge, Jackson county, Missouri, to Kansas City Structural Steel Co. Kansas City Mo.

127 tons, bridge, Columbia county, Wisconsin, to Worden-Allen Co., Milwaukee.

125 tons, bridge for United States engineer, Delaware City, Del., through Triest & Earle, Philadelphia, to unnamed fabricator.

100 tons, shapes and bars, bridge, Beaver Creek, Sands county, Montana, to American Bridge Co., Pittsburgh, and Pacific Coast Steel Co., Seattle; Hansen Construction Co., Opportunity, Wash., general contractor.

100 tons, miscellaneous bridge work, state of Pennsylvania, to Fort Pitt Bridge Co., Pittsburgh.

100 tons, postoffice, Bryn Mawr, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.; Gondos Co., Atlantic City, N. Y., general contractor.

Contracts Pending

5690 tons, piling for seawall, Seattle; bids Jan. 11.

900 tons, state bridge, three 215-foot spans, Choptank river, Caroline county, Maryland; bids in Jan. 10.

900 tons, state bridge, Preston, Md.

735 tons, building for General hospital, San Francisco; bids returned unopened.

650 tons, municipal viaduct, contract No. 14, Philadelphia; Francis A. Canuso & Son, Philadelphia, awarded general contract.

560 tons, bridge, Blair, Okla.

500 tons, highway bridge, Utah.

450 tons, prison buildings, Woodburne, N. Y.; bids Jan. 12 at Albany, N. Y.

440 tons, state highway bridge, Ulster county, New York; bids Jan. 10.

435 tons, steel piling, bulkhead, lighthouse depot, Chelsea, Mass.; Blakeslee-Rollins Corp., Boston, recommended for contract at $45,500.

400 tons, state bridge over Mojave river, California.

400 tons, building, Women's Republican club, New York.

375 tons, buildings, Herman Biggs Memorial hospital, Ithaca, N. Y.; bids at Albany, Jan. 12.

375 tons, Valverde and Bernasconi tunnels for Metropolitan water district of southern California, Los Angeles; bids Jan. 30.

350 tons, federal house of detention, Sandstone, Minn.; W. W. Magee Co., St. Paul, low.

300 tons, state bridges, Oxford-Webster, Mass.; National Construction Co., Everet, Mass., low. Pittsfield, Mass., Lee Construction Co., Boston, low; bids Jan. 3. Former bid $115,004 including highway section; latter bid $37,273.

300 tons, postoffice, New London, Conn.; bids Feb. 1, former bids rejected.

245 tons, state reformatory, Elmira, New York; general contract to William F. Hendrich Co., Cleveland.

230 tons, bridge at Stockton, Calif., for Southern Pacific Co.; bids opened.

200 tons, ventilation building, Boston-East Boston traffic tunnel, North street end; Rugo Construction Co. Inc., Boston, low at $128,221.

195 tons, tunnels at Coachella, Calif.; for metropolitan water district of

southern California; bids soon.
190 tons, war department barracks, heating plant, Carlisle, Pa.; H. John Homan & Co., Philadelphia, awarded general contract on bid of $136,000.
170 tons, east annex to hospital building, Hot Springs, Ark.; Henry B. Ryan Co., Chicago, general contractor.
150 tons, state buildings, Willard, N. Y.; general contract to Crowell & Little Construction Co., Cleveland.
150 tons, postoffice, Littleton, N. H.; V. & M. Construction Co., New Rochelle, N. Y., low.
150 tons, cranes on specification 580-D, bureau of reclamation, Denver; bids opened.
133 tons, Park avenue bridge, Akron, O.
100 tons, shapes and bars, state bridge, Machias, Me.; Hector J. Cyr Co. Inc., Waterville, Me., contractor at $46,905.53.
100 tons, postoffice, Waltham, Mass.; V. & M. Construction Co., New Rochelle, N. Y., low.
100 tons or more, cranes, bureau of yards and docks, Puget Sound, Wash.; Harnischfeger Sales Corp., Milwaukee, low, $41,840, on bids Jan. 4.
Unstated tonnage, additions and remodeling, postoffice and courthouse, San Francisco; Lindgren & Swinerton, San Francisco, low at $625,534.

Wire Moving in Small Lots Only; Prices Steady

Wire Prices, Page 29

Chicago—Wire demand has improved little following decline in shipments to the year's lowest level in December. Jobbers refrain from adding to stocks. Consumption of manufacturers' wire by the automotive industry is fairly steady, but little additional improvement is in prospect. Prices are steady at $2 for carload lots of wire nails, and 2.25c for plain wire.

Worcester, Mass. — But slight gain from the seasonal year-end slump in wire buying has developed, although mills expect a moderate increase this month. Prices are firm. Contractors will buy 64,711 feet of wire rope railing and 34,557 linear feet of fencing for Connecticut highways, bids on general contracts being in.

Pittsburgh—Jobbers and other wire consumers are not increasing commitments although an upturn is to be expected probably later this month. Domestic mills are now meeting foreign prices on nails at Gulf and other southern points. In the domestic market nail and wire prices are fairly firm.

Cleveland—Wire purchases continue of a hand-to-mouth character, few consumers apparently wanting to contract for first quarter. Many users were completing inventories during the week, with consequent dearth of orders. This month is expected to develop moderate improvement. Prices are steady.

Concrete Bars

Awards Increase, with 2200 Tons Placed for Two California Projects, 1300 Tons for Philadelphia Postoffice —1600 Tons Pending for Seattle

REINFORCING BAR PRICES, PAGE 29

New York—A heavy volume of highway mesh and bars pends for roads and bridges, but contractors are slow to close, although one bought 160 tons for a Delaware county highway. Contractors are bidding very low prices on mesh and are shopping to get under their own low quotations.

Boston—More than 2000 tons of reinforcing steel is active in New England, including 1000 tons for the Enfield-Ware, Mass., dam project, and a similar tonnage for highway reinforcement in Connecticut and Rhode Island. Early action is expected on a good part of the work. Highway reinforcing prices are easy. Billet bars are steadier, but generally untested at the recent adjusted levels of 1.50c, Pittsburgh and Buffalo, for mill lengths.

Philadelphia—The largest award in the local reinforcing bar market in many weeks has been placed with the Concrete Steel Co., here, for 675 tons of bars and 2,000,000 square feet of mesh, amounting to a similar tonnage, for the Thirtieth street postoffice.

Pittsburgh—Mill shipments and specifications for new billet bars are as dull as during latter December. The base price of 1.50c, Pittsburgh, on mill lengths in this territory is general. W. F. Trimble & Sons Co., Pittsburgh, is contractor at $146,705 for construction of a roadway between Pittsburgh and Clairton, Pa.

Cleveland — Approximately 1000 tons of concrete bars still are to be placed for state highway and bridge work for which general contracts were awarded in December. Small miscellaneous jobs afford little outlet.

Chicago—Activity in reinforcing bars is at a low level, orders and inquiries lacking improvement and generally consisting of lots of less than 50 tons at a time.

Awards Compared

	Tons
Awards, week ended Jan. 7..	**6,867**
Awards, week ended Dec. 31	**2,224**
Awards, week ended Dec. 24	**1,468**
Awards, this week, 1932.....	**3,315**
Av. weekly awards, 1932....	**3,920**
Av. weekly awards, Dec.	**2,370**

Contracts Placed

1400 tons, approximately, bars and wire mesh, Thirtieth street postoffice, Philadelphia, to Concrete Steel Co., New York, through Wallin Co. Inc., New York.
1150 tons, Pine canyon dam, Pasadena, Calif., to Pacific Coast Steel Corp., Los Angeles.
1100 tons, contract No. 2, Golden Gate bridge, San Francisco, to Pacific Coast Steel Corp., San Francisco.
750 tons, bridge and spans, Kansas river, Seventh street trafficway and retaining wall, section A, Kansas City, Mo., to Sheffield Steel Corp., Kansas City; Kansas City Bridge Co., general contractor.
300 tons, five 3-story apartments, naval submarine base, Coco Sola, C. Z., to unnamed interest; Tucker McClure Co., Los Angeles, general contractor.
250 tons, San Jacinto tunnel, Los Angeles county, California, to unnamed interest.
250 tons, pier No. 35, San Francisco, to Pacific Coast Steel Corp., San Francisco.
226 tons, state highway work in Alameda county, California, to unnamed interest.
220 tons, state bridge, Lackawanna county, Pennsylvania, to Kalman Steel Corp., Bethlehem, Pa.
200 tons, tunnels at naval operating base, San Diego, Calif., to unnamed interest.
160 tons, highway, Hancock-East Branch, N. Y., R. C. 3408, Delaware county, to Kalman Steel Corp., Bethlehem, Pa., Stanley Contracting Co. Inc., Brooklyn, N. Y., contractor.
130 tons, one air corps barracks, Pope Field, Ft. Bragg, N. C., to Dietrich Bros., Baltimore; York Construction Co., Raleigh, N. C., general contractor.
121 tons, state highway work in San Joaquin county, California, to unnamed interest.
110 tons, two state highway sections, Queens county, New York, to Kalman Steel Corp., Bethlehem, Pa.
100 tons, work on Benson-Vail highway, Phoenix, Ariz., to unnamed interest.
100 tons, administration and laboratory buildings, Saratoga, N. Y., to Joseph T. Ryerson & Son Inc., New York; through Charles B. Saxon Inc.
100 tons, powerhouse and other buildings, Great Meadow prison, Comstock, N. Y., to Truscon Steel Co., New York; through Amsterdam Construction Co.
100 tons, comprising 60 tons of bars and 40 tons of piling, bridge for the United States engineer, Wilmington, Del., at Delaware City, Del., to Kalman Steel Corp., Bethlehem, Pa.; through Trieste & Earle, Philadelphia, general contractor.
100 tons, gymnasium, teacher's college,

San Diego, Calif., to unnamed interest.

Contracts Pending

3838 tons, San Gabriel dam No. 2, Los Angeles county, California; West Slope Construction Co., Chicago, low for general contract.

1678 tons, seawall, Seattle; bids Jan. 11.

500 tons, cell block and other buildings, state reformatory, Elmira, N. Y., W. F. Hendrich Co. Inc., Syracuse, N. Y., general contractor.

350 tons, all but 14 tons fabric or bar mat reinforcement, highway, Washington, Litchfield and Morris, Conn.; Altieri Construction Co., low. Contract also includes 58,388 feet of ½ and ¼-inch expansion joint.

320 tons, 78 tons deformed bars, remainder fabric or bar mat reinforcement, highway, Seymour and Oxford, Conn.; D. Arrigoni low for general contract. Contract also includes 41,503 feet of ½ and ¼-inch, expansion joint.

300 tons, prison buildings, Woodburne N. Y.; bids Jan. 12.

250 tons, infantry battalion barracks, Plattsburg, N. Y. Bids Dec. 7 rejected, to be readvertised.

250 tons, highway, federal aid project, East Main road, Portsmouth, R. I.; Callan Construction Co., Bristol, R. I., general contractor.

250 tons, subway, Newark, N. J.

200 tons, William Land school, Sacramento, Calif.; bids Dec. 29.

200 tons, St. John's Park warehouse for New York Central railroad, New York.

161 tons, highway work in Clark and Pershing counties, Nevada; bids Jan. 4.

130 tons, all but 8 tons bar mat reinforcement, highway, New Canaan, Conn.; D. Deering Co. low on general contractor. Contract also includes 15,135 feet of ½ and ¼-inch expansion joint.

116 tons, bridge over San Gabriel river, Long Beach, Calif.; bids Jan. 3.

Mirrors of Motordom

(*Concluded from Page* 11)

attitude toward new car buying put him, too, in the "unworthy" class: the parts manufacturer hastened home to reinstate the discharged workman; the latter reinstated his order for the car; the automobile manufacturer forgave all and reinstated the parts order.

To Market Excess Cars

An automobile manufacturer who has been attempting to buy materials and parts on 90-day trade acceptances is said to have arranged with a Chicago financing organization for the latter to take off its hands all cars remaining unsold above a definite monthly production quota. . . .A. O. Smith Corp., Milwaukee, recently recalled 125 men because of additional frame business. . . .Midland Steel & Equipment Co., Milwaukee, purchased over 5000 surplus obsolete frames from the Smith corporation, scrapped them and shipped the resulting 1400 tons of scrap to Detroit by water. . . .Not a pound of steel moved by rail from the Pittsburgh district to Conneaut, O., and thence by water to Detroit in 1932 . . . For a number of mechanical parts Chevrolet is the source of supply for Pontiac, now a straight eight, and Buick for Olds. . . .It was stated recently that an official of Montgomery Ward & Co., Chicago, admitted the company contemplated marketing a low-price car. A vice president now states that while the company has been considering the matter for some months, immediate action is not likely.

Pipe

Reported Suspension of Drilling In East Texas May Delay Movement—4000-Ton Project Active

PIPE PRICES, PAGE 42

Chicago—New inquiry for cast iron pipe is light and action generally is lacking on pending projects. Plans have yet to be issued for the new Chicago waterworks, financing of which is being provided by a federal loan. The amount of pipe for this project, it is estimated, is well over 5000 tons. It has been proposed to erect a filtering plant; a plant adequate for the city would require about 50,000 tons of pipe, but it is unlikely that such a project will materialize in the near future.

Boston—Bids on 1200 tons of cast pipe for Boston were rejected, the mayor objecting to the increase in prices over those submitted a year ago. Boston bought about 2000 tons a year ago at $28.40 a ton, delivered, while the low bid this year was $35 for 16-inch. Bids on 225 tons of castings also were rejected, but the E. L. LaBaron Foundry Co., Brockton, Mass. was awarded 125 tons of iron castings; Mechanics Foundry Co., Boston, 150 tons, and the Foran Foundry & Mfg. Co., Flemington, N. J., 75 tons. Bids by the two former were not the lowest, but the award was made because the two foundries are located in the state. Prices on iron castings were generally well below those submitted a year ago.

New York—Possibility of a 90-day suspension in drilling operations in the East Texas oil fields is causing pipemakers some concern here. Not only would this preclude the placing of pending tonnage but delay shipments on existing orders, it is believed. Cast pipe inquiry is mainly for miscellaneous small lots for state hospital water lines and highways. Two hospital jobs, about 140 tons, have been placed. Prices at $30 to $32, eastern foundry, are untested.

Pittsburgh—Jobbers are not disposed to round out their stocks of standard pipe and demand from other sources remains slow. One producer here started up a seamless mill on 2 to 3-inch boiler tubes last week, while mills in several other plants run only for occasional turns. Mercer Tube & Mfg. Co., Sharon, Pa., has commenced production of butt weld pipe up to 3 inches. Alloy tubing is in fair demand from the automotive trade. Youngstown Sheet & Tube Co. scheduled resumption of operations at an idle seamless mill Jan. 6.

Philadelphia — Subcontract has been let by McCloskey & Son, Philadelphia, for foundation work for the customs house here, requiring 1500 tons of steel pipe, mainly 18 inches in diameter. It is estimated that not more than 275 tons of piling will be used.

Cleveland—Subcontracts are about to be placed for pipe and conduit work for the Cleveland postoffice, requiring a total of about 400 tons.

Cast Pipe Placed

350 tons, iron castings, Boston, 125 tons to E. L. LaBaron Foundry Co., Brockton, Mass.; 150 tons, Mechanics Foundry Co., Boston; 75 tons to Foran Foundry & Mfg. Co., Flemington, N. J. Bids on 1200 tons of cast pipe, eight, 12 and 16-inch, and on 225 tons of castings rejected.

Steel Pipe Placed

500 tons, welded steel pipe, small sizes, eastern and western navy yards, to Albert Pipe Supply Co., Brooklyn, N. Y.; bids Dec. 13; eastern requirements, $16,512.57, delivered; western, $12,074.97, f.o.b. works.

100 tons, 30-inch drag suction pipe, United States engineer, Memphis, Tenn., to Steacy-Schmidt Mfg. Co., York, Pa.; bids Dec. 16.

Cast Pipe Pending

Unstated tonnage, 9740 feet of various sizes for Seattle waterfront improvement; bids Jan. 11.

Steel Pipe Pending

4000 tons, 15.860 feet of 7-foot diameter pipe; 12,000 feet to be plates 5/8, 9/16 or ½-inch thickness; 3860 feet to be 7/16-inch; water line for Denver; bids to board of water commissioners Jan. 10. Previously reported as cast pipe line.

3881 tons, 180 miles of 5, 6 and 8-inch O. D. gas line pipe for metropolitan water district of southern California, Los Angeles; bids Dec. 27.

Strip

Requirements Other Than for Automotive Uses Are Light—Prices Steady Without Test

STRIP PRICES, PAGE 29

Pittsburgh—Although December fell only slightly under November in strip steel specifications, the outlook for January is not promising. Strip production here is roughly at 10 to 12 per cent, with independent mills running alternate weeks. One producer started its 9 and 16-inch mill Jan. 3 for several days run. Owing to the small size of orders the strip steel market is firmly held and 1.45c on hot-rolled and 2.00c for cold-rolled appear fairly firm.

Philadelphia—Strip sellers report little improvement. Hot-rolled is 1.45c, Pittsburgh, and cold-rolled 2.00c. The next fortnight is expected to see some gain.

Cleveland — Recent automotive specifications have tapered slightly, and strip mills operating on automotive account are at a slower rate than automotive sheet mills, about 30 per cent compared with 35 per cent. Backlogs are sufficient for ten days to two weeks. Other consuming lines indicate little interest in the market. Cold-rolled strip usually is 1.90c to 2.00c, base, Cleveland; and hot-rolled 1.45c, to 1.50c, base, Pittsburgh.

Chicago — Occasional gains are noted in specifications for strip steel, total activity, however, representing little change. Automotive requirements are steady, while some miscellaneous consumers are more active since the holidays. Mill operations average around 15 per cent, with prices fairly steady at 1.55c, Chicago, for hot strip. Cold-rolled strip is 2.00c, Pittsburgh-Cleveland.

Operating Rate Up to 15.5; Little Change This Week

Pittsburgh — Ingot operations gained three points last week and were at 13 per cent when the week closed. A large interest here average 14 per cent, but other mills were slow to resume after Jan. 2. The rate this week may better 13 per cent. Seven out of 53 steelworks blast furnaces are on slow blast here, following the banking of an Aliquippa, Pa., furnace. Finishing mill operations here are infrequent, but at a lower rate on the average than the 13 per cent ingot rate.

Philadelphia — Eastern steelmaking operations at around 10 per cent are slightly higher than a week ago. One large producer has scheduled January operations at slightly above 14 per cent. Another, whose open hearths have been down since before the holidays, is scheduled to put in one furnace this week.

Buffalo — Buffalo steelworks stepped up operations last week to 19 per cent, one of the highest levels in recent months. Seven open-hearth furnaces continued to produce ingots throughout the week. The number that will be in production this week is problematical but best information is that if there is a decline it will be only three or four points.

Operations, week ended Jan. 7	**15.5**
Operations, week ended Dec. 31	**13**
Operations, week ended Dec. 24	**12**
Operations, one year ago	**25**
High for 1932, Feb. 6	**28.5**
Low for 1932, July 9 & Dec. 24	**12**

Cleveland—Steel ingot production here for the week ended Jan. 7 was 35 per cent, up from 18 per cent the preceding week. American Steel & Wire Co. increased its active open hearths from two to four; Corrigan, McKinney Steel Co. and Otis Steel Co. continued with four each. The Steel & Wire company suspended temporarily operation of its bessemer converter. No change in the 35 per cent rate is scheduled for the current week.

Chicago — Ingot production increased only fractionally the past week to about 10 per cent. Blast furnace schedules have been reduced through the banking of one furnace at South Chicago, leaving seven stacks in blast, six of which are steelworks furnaces.

Birmingham, Ala.—Steelworks operations in the week ended Jan. 7 ranged from 17½ to 20 per cent.

Warehouse Buying Holds Back in Early Weeks

Warehouse Prices, Page 42

New York—Warehouse volume has not risen from the usual year-end slump and tonnage is light. Prices, while not tested, are inclined to be weak, easiness in plates being noted. Reductions in two special brands of sheets are now effective.

Philadelphia—Prices on two special brands of sheets have been reduced to 5.30c by jobbers here. Business has shown a modest improvement, most jobbers looking for further gains during the next 60 days.

Baltimore — Warehouse buying here continues light, with credit situation an increasing factor. Prices are weak, although official lists are unchanged.

Pittsburgh—Failure of orders to improve the first week of January is general in the steel warehouse market. There has been no change in quoted prices.

Cleveland—Warehouse business here continues at a slow rate, with price schedules unchanged. Steel mills report trade with jobbers dull.

Detroit—Thus far in January the level of warehouse business in iron and steel has been on a parity with the opening few days of December and November, which is encouraging.

Cincinnati—Gradual restoration of buying is reported by warehouses after the extreme dullness of the holidays.

Chicago—Warehouses expect the latter half of January to develop some improvement, the first half traditionally being a slow period. Prices are steady.

St. Louis—The movement of iron and steel goods from warehouses shows somewhat more than the usual seasonal dullness.

Foreign Ores Offered At Lower Figures

Iron Ore Prices, Page 36

New York—Normal revisions have been made in several foreign ores, pending test of actual business. Foreign manganiferous ore, 45-55 per cent iron and 6-10 per cent manganese, has been reduced to 8 cents per unit, alongside docks, Atlantic ports; North African low phosphorus to 7 cents; Swedish low phosphorus to 8 cents; Spanish and North African basic to 7 cents; Newfoundland foundry to 7 cents; and chrome ore, 48 per cent, to $16.50 per gross ton, c.i.f. Swedish basic, 65 per cent, is unchanged at 7.50 to 8 cents; and spot tungsten, $8.75 to $10 per short ton unit, duty paid. Local eastern ores are purely nominal. Brazilian manganese ore, 46 to 48 per cent, is nominally 17 cents. Indian manganese, 48 to 50 per cent, is untested.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Asterisk denotes price change this week

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. furnace	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Philadelphia, delivered	13.26 to 13.76
Virginia furnace	17.25
Granite City, Ill., furnace	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	18.90
Buff., all-rail, Newark	17.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. Louis	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock delivery	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinci.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local delivery	16.50
Buff., all-rail, Brooklyn	19.40
Buffalo, all-rail, Newark	17.78
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
Eastern, del. Philadelphia	13.76 to 14.26

FOUNDRY, NO. 1X

Buffalo fur., local delivery	17.50
Eastern, del. Philadelphia	14.26 to 14.76

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo, fur., local del.	16.50
Eastern Penna, delivered	14.63 to 18.91
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district furnace	14.00
Pittsburgh, delivered	14.63 to 15.13
Eastern Penn., delivered	13.50
Buffalo fur., local delivery	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley furnace, standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19; 15—$21 to $23.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville furnace	$1.75 to 2.00
Connellsville foundry	2.50 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., delivered	8.21 to 8.81
Chicago, ovens, outside del	7.00
Chicago, delivered	7.75
New England, delivered	10.00
St. Louis, delivered	7.75
Birmingham, ovens	4.00
Indianapolis, delivered	7.75
Ashland, Ky., ovens, Connell., basis	4.50
Fortsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, delivered	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania New Jersey furnaces (Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports (Nominal)

*Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.00
*North African low phos.	7.00
Swedish basic, 65%	7.50 to 8.00
*Swedish low phos.	8.00
*Spanish, North African basic, 50 to 60%	7.00
Tungsten, spot, short ton unit, duty paid	$ 9.75 to 10.00
*Newfoundland fdy., 55%	7.00
*Chrome ore, 48% gross ton c.i.f.	$16.50

Manganese Ore

(Nominal)

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	nominal
South African, 52%	18 to 19 cents
South African, 49-51%	nominal
South African, 44-47%	nominal
*Indian, 48-50%	nominal
*Brazilian, 46-48%	17 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	30.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	47.00
Birmingham, Ala	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bessemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	26.00
Forging, Chicago	31.00
Forging, Pittsburgh	31.00
Forging, Philadelphia	35.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82%, tidewater, duty paid	$68.00
Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	24.00
Ferrosilicon, 50 per cent, freight all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent	120.00 to 130.00
Silicomang., 2½% carb.	85.00
2% carbon	90.00
1% carbon	100.00
(The above for spot carlots. Contract price $5 a ton less.)	
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, for spot delivery	10.00
Ferrotungsten, stand., lb. cont.	0.94 to 1.00
Ferrovanadium, 35 to 40 per cent, per lb. contained, on analysis	2.60 to 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60 per cent, per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$10.50
*Washed gravel, import duty paid tide, gross ton	16.50

Pig Iron

Increase in Shipments Indicated This Month—One Buffalo and a Valley Stack Resume

PIG IRON PRICES, PAGE 36

Pittsburgh—Release of a few carload orders for pig iron for two radiator manufacturers in this district is an improvement of only minor proportions. The price situation still is irregular, with competitive conditions severe. The Glassport, Pa., steel foundry which has been operating one acid and two basic open hearths recently bought a small lot of bessemer iron. A steelworks in this district has been disposing of some of its basic and bessemer stocks in the merchant market, but contrary to some reports does not intend entering the merchant iron market as a practice. Blast will be resumed this week on the Shenango Furnace Co.'s banked stack at Sharpsville, Pa.

Boston—A wide range of prices continues to prevail in New England, with further concessions on eastern Pennsylvania iron. Consumer inventories are low, but little inquiry is out. A Rhode Island consumer is reported to have bought foreign iron on its recent inquiry for several hundred tons.

New York — Pig iron buying is starting the new year slowly. Little sizable tonnage is in immediate prospect. Buffalo foundry iron for delivery in this district is nominally $14, furnace, and eastern Pennsylvania iron, $12.50 to $13, furnace.

Philadelphia — Slightly better carlot inquiry prevails in pig iron. Sellers point out that another week or two may see a notable improvement. Eastern Pennsylvania foundry iron is $12.50 to $13, base, furnace; and basic, nominal at $13.50, delivered. Low on 50 tons of foundry pig iron for the Washington reformatory Jan. 3 was $15.10, delivered, by an eastern Pennsylvania furnace.

Cleveland—Relying at present chiefly on shipments to automotive foundries, lake furnace interests believe the total movement this month will exceed that of December. For the leading lake interest supplying the Michigan automotive territory, December shipments finally measured up to practically the November volume. Sales during the week improved slightly to around 2000 tons. Inquiry is light. It is understood, though not confirmed, that General Motors has placed a blanket contract for Buick's first quarter requirements with a Cleveland furnace. A year ago General Motors inquired on a basis of 100,000 tons for all its units for 1932, but actual specifications fell far short of that mark. For local delivery the market is nominal at $15, base, furnace. In outside territory, $13.50, base, Cleveland, is noted in some recent transactions.

Buffalo—Sales have picked up, in comparison with the dull state of trade in December. Consumption will increase substantially this week with the resumption of production in the local plant of the American Radiator & Standard Sanitary Corp. A run of indefinite length, but on a comparatively small scale for the present, is planned.

The Wickwire-Spencer Steel Co., Buffalo, has resumed operation of one of its blast furnaces after a shutdown over the holidays.

Cincinnati—A better demand for pig iron developed during the week, with more carload orders, one sale of 400 tons and one of 750 tons. Inquiries for small lots also increased. However, the melt in this district so far this year has shown little improvement.

Chicago—Pig iron releases are in sufficient volume to raise the January tonnage moderately above the December volume. Small consumers are slightly more active in the market, although orders received usually involve only single carloads. Automotive requirements are expected to maintain recent gains during January, while the outlook for farm equipment manufacturers continues rather unfavorable. Some interests, however, are taking larger lots than during fall months. Pig iron prices are steady at $15.50, furnace, for No. 2 foundry and malleable.

St. Louis—Pig iron specifications since Jan. 1 have exceeded expectations and indicate heavier shipments this month than in December. Long-distance calls for rush shipments of carloads have been frequent following inventory periods when stocks were depleted.

Caldwell Foundry & Machine Co., Birmingham, Ala., has recently shipped some heavy 9-foot cast iron pipe to the Chinese government at Canton.

Coke

Quieter Market Prevails in Most Districts, with Easier Price Trend in Beehive

COKE PRICES, PAGE 36

Pittsburgh—Only in coke for domestic heating purposes is there any pressure for delivery. Some sellers in this district are moving as many as 50 to 60 cars of this fuel daily. Demand for metallurgical purposes lacks improvement. Prices for beehive furnace coke remain around $1.75; beehive foundry $2.50 for common brands, and $4.25 for premium. These figures are subject to concessions.

New York—Shipments of metallurgical coke are better, but with foundries in this district averaging not more than two days a week sellers declare the movement is far below normal. Prices are unchanged, with beehive furnace $1.50 to $2, and $2 to $2.15, Connellsville, for the heating and smelting grades, respectively; and beehive foundry coke $2.50 to $4.25, western Pennsylvania ovens. By-product foundry coke is $8.21 to $8.81, Newark, N. J.; $10, New England; and $8.50, Philadelphia.

Cincinnati—Shipments of by-product foundry coke have held at an even rate during the past five weeks. The absence of a slump during the holidays was considered a favorable indication. Prices are unchanged.

Chicago—Shipments of by-product foundry coke are fairly steady, and though December marked the sixth consecutive month of rising shipments indications so far are lacking of a continuation of this trend during January. Heating coke is quieter. Foundry coke continues $7, ovens, for outside delivery, and $7.75, delivered Chicago.

St. Louis—Demand for metallurgical coke is quiet, and not much improvement is anticipated this month. Mild weather has interfered with domestic and industrial coke business.

Birmingham, Ala.—Coke specifications show a little improvement though the market still is slow. Production was not reduced much through the holiday season. Shipments continue to be made to the East and Middle West. By-product coke holds at $4, base, Birmingham.

Scrap

Market Is Heavy and Prices Make Some Downward Movement—Melters Indifferent

Chicago—Iron and steel scrap prices retain a fairly steady tone despite absence of buying and restricted rate of shipments against orders. Dealers find little heavy melting steel available at the current market of $5 to $5.50, although mills are not interested. Railroads are unwilling to dispose of scrap at current prices and little material has been sold from recent lists. Mill stocks have been reduced moderately during the past six months as a result of absence of buying. Quotations on most grades are nominal and unchanged.

New York—At least three scrap dealers are loading No. 1 and No. 2 steel for export, several thousand tons of the latter being new business for Europe while additional volume has been booked for Japan. For

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.50 to 8.00
Boston, dealers	2.50 to 2.75
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	6.00 to 6.50
Chicago	5.00 to 5.50
Cleve., No. 1	7.00 to 7.50
Cleve., No. 2	6.00 to 6.50
Det., No. 1 deal.	4.50 to 5.00
Det., No. 2 deal.	3.00 to 3.50
E. Pa. del. mill	6.50
E. Pa., No. 2 del.	5.00 to 5.50
N. Y. deal. R. R.	4.00 to 4.50
N. Y. deal. No. 2	3.00
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	8.00 to 8.50
St. L. No. 1 sel.	5.50 to 6.00
Federal, Ill.	4.75 to 5.25
Granite City, Ill.	5.00 to 5.50
Valleys, No. 1	8.50 to 9.00

COMPRESSED SHEETS

Buffalo, dealers	6.00 to 6.50
Chi. (Factory)	3.75 to 4.25
Cleveland	6.50 to 7.00
Detroit, dealers	4.00 to 4.50
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	7.75 to 8.25
Valleys	8.25 to 8.75

BUNDLED SHEETS

Buffalo	4.00 to 4.50
Cincinnati, del.	4.25 to 4.75
Cleveland	4.50 to 5.00
Eastern, Pa.	5.00
Pittsburgh	7.00 to 7.50
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	1.25 to 1.75
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	8.50 to 9.00
Boston, dealers	2.75 to 3.00
Buffalo	9.50 to 10.00
Chicago (3 ft.)	7.50 to 8.00
Chicago (2 ft.)	8.00 to 8.50
Cincinnati, del.	9.00 to 9.50
Detroit, deal.	8.00 to 8.50
Pitts. (open-hearth, 3 ft. and less)	10.00 to 11.00
St. Louis	7.00 to 7.50

STOVE PLATE

Birmingham	5.00 to 5.50
Boston, realers	2.00 to 2.50
Buffalo	7.50 to 8.00
Chicago, net	4.50 to 5.00
Cinci., deal. net	3.50 to 4.00
Det., net deal.	2.50 to 3.00
Eastern, Pa.	6.00 to 6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.50 to 7.00
Eastern Pa.	8.50
Pittsburgh	8.50 to 9.00
St. Louis	5.25 to 6.25

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	5.75 to 6.25

LOW PHOSPHOROUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	8.50
Pittsburgh billet bloom crops	10.00 to 10.50
Pitts., sheet bar crops	10.00 to 10.50

FROGS, SWITCHES

Chicago	5.50 to 6.00
St. Louis	5.00 to 5.50

SHOVELING STEEL

Chicago	5.00 to 5.50
Cleveland	5.75 to 6.00
St. Louis	4.75 to 5.25

RAILROAD WROUGHT

Birmingham	7.50 to 8.00
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Cinci., No. 2	5.00 to 5.50
Chi., No. 1, net	4.50 to 5.00
Chicago, No. 2	5.50 to 6.00
Eastern Pa.	6.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	8.00 to 8.50
St. Louis, No. 1	3.50 to 4.00

SPECIFICATION PIPE

Boston	3.00 to 4.00
St. Louis	4.75 to 5.25
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	6.00 to 6.50
Chicago, No. 1	3.75 to 4.25
Cinci., No. 1 dl.	4.00 to 4.50
Cinci., No. 2	2.50 to 3.00
Cleve., No. 2	3.00 to 3.50
Det., No. 1 new deal.	3.25 to 3.75
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.75

MACHINE TURNINGS

Birmingham	2.50 to 3.00
Boston, dealers	0.75 to 1.00
Buffalo	3.75 to 4.25
Chicago	3.00 to 3.50
Cinci., deal	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit	1.25 to 1.75
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	1.50 to 2.00
Valleys	6.50 to 7.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	0.75 to 0.90
Buffalo	3.75 to 4.00
Cinci., deal	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	1.75 to 2.25
Eastern Pa.	3.50 to 3.75
N. Y., deal.	1.35 to 1.50
Pittsburgh	5.75 to 6.25

CAST IRON BORINGS

Birming., chem.	12.00 to 13.00
Birming., plain	2.50 to 3.00
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	4.25 to 4.50
Chicago	3.00 to 3.50
Cinci., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	1.75 to 2.25
Eastern Pa.	3.50 to 3.75
E. Pa., chem.	8.00 to 10.50
N. Y., deal.	1.00 to 1.50
Pittsburgh	5.75 to 6.25
St. Louis	2.00 to 2.50

PIPE AND FLUES

Cinci., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.00 to 4.50
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.00 to 6.50
Detroit	2.75 to 3.25

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	6.50 to 7.00
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	3.50 to 4.00

AXLE TURNINGS

Boston, deal.	2.50 to 3.00
Buffalo	6.25 to 6.75
Chi., elec. fce.	4.50 to 5.00
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.00
Pittsburgh, O. H.	7.00 to 7.50
St. Louis	3.00 to 3.50

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Eastern Pa.	14.50
St. Louis	8.75 to 9.25

SHAFTING

Boston, ship pt.	6.50 to 7.00
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	11.00 to 12.00

CAR WHEELS

Birming., iron	7.00 to 7.50
Boston, iron deal.	3.25 to 3.50
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	7.00 to 7.50
Chi., rolled steel	7.00 to 7.50
Cincinnati iron	6.25 to 6.75
E. Pa. steel	8.50 to 9.00
E. Pa. iron	8.50
Pitts., iron	7.50 to 8.00
Pitts., steel	8.50 to 9.00
St. Louis, iron	4.75 to 5.25
St. Louis, steel	6.00 to 6.50

NO. 1 CAST SCRAP

Birmingham	8.00 to 8.50
Buffalo (Mach.)	9.75 to 10.25
Buffalo, cupola	9.00 to 9.50
Boston, textile	6.75 to 7.00
Boston No. 2	2.25 to 2.50
Chi., mach. net	5.50 to 6.00
Chi., railroad net	5.00 to 5.50
Chicago, agri., net	5.00 to 5.50
Cinci., mach. cup	7.00 to 7.50
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00 to 9.50
N. Y., cup. deal.	5.00 to 5.50
N. Y., del. local foundries	8.00 to 8.50
Pitts., cupola	8.25 to 8.75
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1 ma.	6.00 to 6.50
St. L. No. 1	5.50 to 6.00

HEAVY CAST

Boston, del.	3.25 to 3.50
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.50 to 7.00
Cleve., break	5.50 to 6.00
Detroit, auto net deal.	7.00 to 7.50
Det. break., dl.	4.00 to 4.50
Eastern Pa.	8.00
N. Y. No. 1, dl.	5.00 to 5.50
N. Y. break, dl.	4.50 to 5.00
Pittsburgh	7.75 to 8.25

MALLEABLE

Boston, consum.	7.00 to 7.50
Buffalo	8.00 to 8.50
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	5.50 to 6.00
Cinci., R. R., del.	6.50 to 7.00
Cinci., agri. del.	6.00 to 6.50
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 5.50
St. Louis	7.00 to 7.50

RAILS FOR ROLLING

5 feet and over

Birmingham	8.00 to 9.00
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	8.00 to 8.50
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.00 to 7.50

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

Chicago	7.50 to 8.00
Buffalo	9.00 to 9.50
Eastern Pa.	8.50
Pittsburgh	10.00 to 10.50

No. 1, dealers are paying $4 to $4.50, barge, mostly the former, while for No. 2 steel $3, barge, is paid. Outside of this export business which is heavier, scrap is dull and prices on some grades nominal. Eastern pipe foundries are not active in the market. The Bayonne consumer of stove plate is taking this grade at $4.50, barge.

Boston—Scrap is inactive, New England consumers buying little. Some loading of No. 1 for water shipment to Eastern Pennsylvania is being done. Heavy melting steel is inclined to be easier while railroad malleable scrap is off 50 cents.

Philadelphia—An order for approximately 500 tons of No. 2 steel for an eastern Pennsylvania mill, at $5.50, delivered, is notable in a continued dull scrap market here. The price was within the range of the current spread of $5 to $5.50, delivered. Heavy breakable cast has been reduced nominally to $8, delivered, compared with $8 to $8.50, previously. All other quotations are easy, but unchanged. Sellers look for a mild improvement this month and see prospects of a further increase in February.

Buffalo—Expected purchases of heavy melting steel and other scrap have failed to materialize. The difficulty lies in the price situation. Some large dealers have bid only $6 for No. 1 heavy melting steel recently, while others claim no tonnage can be marketed below $7.50. Shortages are likely to force an early break in the deadlock, dealers predict. There is practically no scrap under contract for delivery this year in this district.

Pittsburgh—On a minor sale into consumption of under 1000 tons, heavy melting steel has been reduced 25 cents per ton and is now quoted $8 to $8.50. The year end witnessed no important buying by the leading interests here or by the larger independents with the exception of the one small sale. The Baltimore & Ohio railroad closes Jan. 9 on 8455 tons, including 3000 tons of destroyed steel cars, 2000 tons of No. 1 steel and 1200 tons of uncut structurals. Hydraulic compressed sheets range between $7.75 and $8.25.

Heavy melting steel on the list of the Pennsylvania railroad brought $8.70, Steubenville, O.

Detroit—The iron and steel scrap market continues under the holiday influence, and in the absence of any noteworthy offerings or purchases, prices continue unchanged on the basis of $4.50 to $5 for heavy melting steel and $4 to $4.50 for compressed sheets. The year opens with the expectation that some improvement will develop.

Cincinnati—A more active market for iron and steel scrap has not appeared. Some material is moving on contracts. Reports of slightly higher bids on several items in recent railroad lists tended to halt weakness in quotations.

St. Louis—With new purchasing almost entirely absent and dealers' contracts at a low ebb, activities in iron and steel scrap are at a standstill. Bidding on the small amount of railroad scrap being offered is apathetic, and several western trunk lines have signified their intention of marketing nothing until conditions improve.

Birmingham, Ala.—No immediate recuperation is in sight in iron and steel scrap. Dealers report plentiful supplies except of No. 1 cast. All quotations are weak.

Ferroalloy Requirements Show Slight Improvement

Ferroalloy Prices, Page 36

Moderate improvement is reported in ferroalloy orders. Shipping instructions at Chicago have been received in sufficient volume to lift the January movement above that of December. At Pittsburgh, contracting is slow. Two steelworks blast furnaces in the Pittsburgh district continue to operate on ferromanganese. Prices are steady at recently announced levels.

Equipment

Sellers Still Hopeful for Closing on Live Inquiries

New York—Few industrial plants have prepared budgets for equipment and as a result little business is being figured by machinery dealers and builders. Demand and buying is stagnant, except for government inquiry and continued buying by Japanese interests. Practically all the business to be placed by the Japansese buyers is expected to be bought in this country. Estimates for new plant equipment for the Brooklyn navy yard during 1933 run as high as $200,000, this inquiry to come out during the 12-month period.

Worcester, Mass.—Activity in demand for machinery is still limited largely to Japan and the federal government. In addition to Japanese contracts placed at Providence and Worcester, a Vermont shop is expected to receive some of this business which is for an aircraft plant. One of the leading representatives of the Japanese interest buying tools in the United States died in this country recently. In at least one transaction this business has been placed for cash. Outlook is favorable in some quarters for Russia to purchase equipment during the first half of the year. Ball bearing plants in some instances have increased output. The moderate spurt with textile machinery builders which started last fall has gradually slumped.

Pittsburgh—Complete equipment including hammers, forging presses and machine shop equipment of the Pittsburgh Forge & Iron Co. is being offered for sale. The company recently was sold to a local steel scrap interest. The same indecision as was characteristic in December features the attitude of steel mill equipment customers in this district. Hesitancy in releasing, even on old appropriations, is still noted. Demand is likewise restricted for steel rolls as rolling mills continue to be closed in many instances. However, one rollmaker here has had sufficient orders to maintain operations in one acid and two basic open hearths for about the last month. Both ingot mold and refractory brick sales are faring poorly.

Cleveland — Activity in sales of machinery and equipment has dwindled to almost negligible proportions. Prospects for a number of fair-sized lists to develop are said to be fair with managerial indecision and lack of funds combining to hold back the placing of such business.

Chicago — Machinery and equipment sellers are hopeful for more active markets in the near future. The necessity of reducing operating costs among most manufacturers is expected to prompt the placing of some orders for equipment, particularly in the case of those interests who have deferred improvement programs over the past several years. A fair volume of tools and machinery is on inquiry and in prospect, it being estimated that prices have been quoted on nearly $200,000 worth of machine tools in this district over recent months. Railroad purchases are light, with inquiry headed by several tools yet to be placed by the Chicago Great Western railroad.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.50c, Conn., for copper

SHEETS	
Yellow brass (high)	11.00
Copper, hot rolled	13.62½
Lead sheets, cut, to jobbers	**7.00**
Zinc sheets (100-lb. base)	**9.00**
TUBES AND PIPES	
Seamless yellow brass (high)	13.25
Seamless copper	12.37½
RODS	
Yellow brass (high, full turning)	8.50
Naval brass	9.62½
ANODES	
Copper, untrimmed	10.50
WIRE	
Yellow brass (high)	11.00

Old Metals

Dealers' buying prices, cents lb. No. 1 Composition· Red Brass

New York	2.62½ to 2.75
Chicago	2.12½ to 2.25
Cleveland	2.25 to 2.50
St. Louis	2.25
HEAVY YELLOW BRASS	
New York	**1.87½ to 2.00**
HEAVY COPPER AND WIRE	
New York	3.50 to 3.75
Chicago, No. 1	3.00 to 3.12½
Cleveland	2.50 to 3.00
St. Louis	2.50
COMPOSITION BRASS BORINGS	
New York	2.37½ to 2.50
YELLOW BRASS TUBING	
Cleveland	1.50 to 1.75
LIGHT COPPER	
New York	2.62½ to 2.75
Chicago	2.12½ to 2.25
Cleveland	2.00 to 2.25
St. Louis	2.25
LIGHT BRASS	
Chicago	1.12½ to 1.25
Cleveland	**1.00 to 1.25**
St. Louis	1.25
LEAD	
New York	**2.00 to 2.25**
Cleveland	1.50 to 2.00
St. Louis	**2.00**
ZINC	
New York	**1.12½ to 1.25**
Cleveland	**1.00 to 1.12½**
St. Louis	**1.25**
ALUMINUM	
Clippings, new, soft, Cleve.	9.50 to 10.00
Clippings, hard, Cleveland	**6.50 to 7.00**
Borings, Cleveland	3.00 to 3.50
Mixed cast, Cleveland	**4.00 to 5.00**
Mixed cast, St. Louis	4.00 to 4.25

Secondary Metals

Brass ingot, 85-5-5-5	5.50
Remelt aluminum No. 12	**8.00 to 9.00**

Metals

Increased Demand Develops for Lead—Copper and Zinc Continue Quiet—Tin Breaks

New York—Demand for lead improved but other metals continued in quiet demand. Quotations showed little revision with the exception of a break in tin.

Copper—Quietness continued in the copper market with custom smelter metal available at 5.00c, Connecticut, for delivery through the first quarter and at 5.12½c for second quarter shipment. Sellers showed no disposition to press metal on the market which has been a contributing factor to steadiness. Rumors have been current in the trade, however, that 4-cent metal will be available before the year is out. Copper prices were somewhat easier abroad with Copper Exporters Inc. offering at 50.0c, c.i.f. European ports. Mine producers in this country remained out of the market. Leading producers of copper and brass products, effective Jan. 2, cut base prices from 1½ to 2 cents per pound. This amounted to little actual change on most products since substantial discounts have been allowed good buyers for some time. Brass ingot and scrap showed little revision during the week.

Lead—Better buying was reported, especially in the Midwest. This was mostly for January shipment but consumers still have a considerable tonnage to place for that position. Light business also was booked for February delivery. Prices held steady.

Zinc—The market was generally quiet last week with sales mostly in carlots for prompt delivery. No shading or pressure to make sales was in evidence. The comparatively favorable statistical position of the industry, especially in the Tri-State ore field, continues a stabilizing factor.

Tin—Liquidation in the London market was reflected in a sharp drop in tin prices both there and in this country. Straits metal for prompt delivery was quoted 27.80c, Jan. 4, the lowest figure in several months. Prices have recovered somewhat from the Jan. 4 low. Domestic consumers have been more active in the market. World visible supplies of tin were cut 1675 tons in December.

Antimony—Prices were firmer but this brought little additional business.

Aluminum—The market continued quiet with prices unchanged.

Distillates Are Firm

New York—Most contract consumers of distillates have covered and spot business is light at unchanged, but firm prices. Phenol buying for industrial needs is dull. Prices are steady at 15.3c to 17.3c. Contracting on naphthalene continues, some consumers covering later than usual.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.10

Quicksilver Steady

New York—Quicksilver prices are unchanged in a quiet market. Spot metal is $48, a virgin flask of 76 pounds in round lots, and $49 a flask in small lots.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper—Electro., del. Conn.	Copper—Lake, del. Midwest	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99% Spot. N. Y.	Antimony Ingot Nickel
Dec. 31	5.00	5.12½	4.75	22.80	22.95	3.00	2.87½	3.12½	22.90	5.40 35.00
Jan. 2—Holiday										
Jan. 3	5.00	5.12½	4.75	22.50	22.72½	3.00	2.87½	3.12½	22.90	5.40 35.00
Jan. 4	5.00	5.12½	4.75	21.80	22.02½	3.00	2.87½	3.12½	22.90	5.40 35.00
Jan. 5	5.00	5.12½	4.75	22.30	22.52½	3.00	2.87½	3.12½	22.90	5.40 35.00
Jan. 6	5.00	5.12½	4.75	22.35	22.57½	3.00	2.87½	3.12½	22.90	5.40 35.00

Pacific Coast

Shape Awards Larger Than in 1931, Other Products Less—Current Business Entirely of Public Nature—Seattle Pipe Extension and Jetty Project Give Fair Steel Tonnages

San Francisco—(*By Air Mail*)—Awards for 1932, with the exception of structural shapes, fell considerably below those in 1931. Due to the placing of 102,000 tons of shapes for the Golden Gate bridge, San Francisco, awards were the second highest in the history on the Pacific Coast, exceeded only in 1929, when 188,401 tons were placed.

Awards for the four major items, during the past two years, are as follows:

	Tons 1932	Tons 1931
Structural Shapes	188,046	106,185
Plates	76,969	128,304
Reinforcing Bars	55,340	63,549
Cast Iron Pipe	43,960	66,989

A number of reinforced concrete bar lettings were placed during the last week of the year. Pacific Coast Steel Corp. booked 1150 tons for the Pine Canyon dam, Pasadena, Calif., 1100 tons for contract No. 2, Golden Gate bridge, San Francisco, and 250 tons for Pier No. 35 in the same city. Bids have been opened on 200 ton for a hospital ward in San Francisco and on 200 tons for a school in Sacramento, Calif. New inquiries call for 161 tons for highway work in Nevada and 116 tons for a bridge at Long Beach, Calif.

Unnamed interests took 25 tons of shapes for the San Jacinto tunnel, Los Angeles, and 193 tons for highway work in Routt county Colorado. Bids were returned unopened on 735 tons for a ward for the General Hospital, San Francisco Lindgren & Swinnerton Inc. was low bidder on 700 tons for an addition to the San Francisco postoffice. New inquiries include 610 tons for a bridge in Mesa county, Colorado, and 402 tons for a bridge near Jensen, Utah. Plain shapes are firm at 2.10c, c.i.f., with wide flange material 2.20c.

Seattle Job Takes Plates

Seattle—The largest plate tonnage placed in the Pacific Northwest in 1932 was awaarded recently for the North Seattle pipe extension. General contract for 45,000 feet of 20, 24 and 36-inch electric welded pipe went to Thomas Scalzo, Seattle. The job will be fabricated at the plant of the Hydraulic Supply Mfg. Co., Seattle. The 1800 tons of ¼-inch plate will be furnished by Barde Steel Co., Seattle, representing the Central Iron & Steel Co., Harrisburg, Pa. Threatened litigation has been settled and the contractor has begun preliminary work. The local plant expects to run full shift for four months.

Hauser Construction Co., Portland, Oreg., is low bidder at $498,142 for the jetty project, Yaquina Bay, Oreg., involving 117 tons drift bolts, 55 tons spikes, 185 tons angle bars and bolts, 715 tons rails, 16 sets frogs and switches, 64,000 feet wire rope and 2300 pile points.

Wallace Bridge & Structural Steel Co., Seattle, has completed delivery of material for the government hangar at Sunnyvale, Calif. Local fabricating plants are short of work and no large contracts are up for the near future. Bids will be opened by the state Jan. 24 for two concrete spans in Okanogan county, tonnage unstated. The Seattle waterfront improvement, bids Jan. 11, involves 5690 tons of sheet steel piling, 1678 tons of reinforcing steel and 9740 lineal feet of cast iron pipe.

Portland jobbers announce that as of Jan. 3 they have adopted a firm price schedule replacing the open market that has prevailed.

Steel in Europe

Welsh Trade Gains—Low Gold Prices Cause Confusion

London—(*By Cable*)—Steel and iron products have not yet emerged from the inertia of the holiday season, but the new year starts with a hopeful spirit. Plants in South Wales are employing 1000 more men in the steel trade than was the case a year ago and the Welsh trade is expanding gradually.

Some confusion follows the drop in Continental quotations, especially on steel bars. Markets on the Continent are dull, but some inquiry has come out following the fresh collapse of gold prices on bars, joists, plates and sheets.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Jan. 5

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$ 9.80	2 18 6	$8.27	1 14 0
Basic bessemer	9.05	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	9.88	2 19 0	.....	.....
SEMIFINISHED STEEL				
Billets	$16.33	4 17 6	$9.61	1 19 6
Wire rods, No. 5 gage	25.13	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$25.96	7 15 0	$26.77	5 10 0
Merchant bars	.94c	6 5 0	.52c to .53c	2 7 6 to 2 8 0
Structural shapes	1.11c	7 7 6	.47c	2 2 6
Plates, †¼ in. or 5 mm.	1.31c	8 15 0	.61c to .62c	2 16 0 to 2 16 6
Sheets, black, 24 gage or 0.5 mm.	1.28c	8 10 0	1.27c	5 15 0
Sheets, gal., 24 gage, corr.	1.58c	10 10 0	1.65c	7 10 0
Bands and strips	1.16c	7 15 0	.77c to .80c	3 10 0 to 3 12 6
Plain wire, base	1.43c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.73c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.65c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.68	0 16 0	$3.20	0 13

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$ 9.80	2 18 6	$ 8.02	205(2)	$ 8.31	300	$14.99	63
Basic bessemer pig iron	9.05	2 14 0*	6.65	170(1)	7.76	280	16.54	69.50
Furnace coke	2.26	0 13 6	4.85	124	3.05	110	4.57	19.20
Billets	16.75	5 0 0	14.47	370	10.66	385	22.97	96.50
Standard rails	1.24c	8 5 0	1.25c	697	1.50c	1,150	1.37c	127
Merchant bars	1.01c	6 15 0	.95c	530	.63c	485	1.19c	110
Structural shapes	1.31c	8 15 0	.99c	550	.59c	455	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.35c	9 0 0	1.17c	650	.76c	585	1.37c	127
Sheets, black	1.39c	9 5 0§	1.44c	800‡	.91c	700‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.69c	11 5 0	2.83c	1,570	1.87c	1,440	4.00c	370
Plain wire	1.43c	9 10 0	2.03c	1,130	1.69c	1,300	1.92c	178
Bands and strips	1.43c	9 10 0	.99c	550	.85c	650	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. 24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

STEEL, WROUGHT AND CAST IRON PIPE, AND TUBING

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

Steel In.	Blk.	Gal.	Iron In.	Blk.	Gal.
⅛ & ¼	57	34	½	28	10½
⅜	62	49½	¾	33	16½
½	65½	55	1—1¼	36	20½
¾	67½	57	2	38	21

LAP WELD

2	61	50½	2	26	12½
2½ to 6	64½	54	2½—3½	33	18½
8	62	51	4—6	35	22
10	60	49	7—8	34	21½
12	59	48	9—12	31	16½

BUTT WELD

Extra strong, plain ends

⅛	48	33	¼ & ⅜ +7	+41
¼ & ⅜	53½	38½	½ 28	12½
½	59	49½	¾ 33	17½
¾	63½	54	1—2 39	23

LAP WELD

Extra strong, plain ends

2	59	49½	2 34	18½
2½ to 4	62½	53	2½—4 39	25
5 & 6	62	52½	4½—6 38	24
8	58	47	7 & 8 36	22
10	51½	40½	9—12 26	13½
12	50½	39½		

STEEL LINE PIPE

2 to 3 butt	66½	2½ to 6 lap	63½
2 lap	60	8 lap	61
10 lap	59	12 lap	58

Discounts on steel pipe are net and not subject to any point or preferential. On iron pipe, the discounts are net.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		*Charcoal Iron*	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts same as for hot rolled, in next column. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. .....$32.00 to 33.00
Four-inch, Birmingham .... 35.00 to 36.00
Four-inch, Chicago ..... 43.40 to 44.40
Six to 24-inch, Chicago..... 40.40 to 41.40
Six-inch and over, N. Y..... 32.00 to 34.50
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $90.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $3 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore*	2.35c
Boston††	2.90c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.40c
Los Ang.	3.30c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.35c
Boston††	3.10c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10c-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl...	2.10c
Los Ang., lcl	2.40c
New York...	2.65c-3.10c
Phila.	2.62½c
Pittsburgh	2.60c
San Fran. cl.	2.40c
San Fran. lcl	2.80c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore*	2.35c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	2.65c
Los Ang.	3.30c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore*	2.35c
Boston††	3.00c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.35c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	2.80c
Boston††	2.90c-3.00c
Buffalo	3.45c
Chattanooga	3.50c
Chicago	2.75c-2.90c
Cincinnati	3.05c
Cleveland	3.00c
Detroit	2.90c-3.05c
Houston	3.35c
Los Ang.	3.60c
New York	3.00c
Portland	4.00c
Phila.*† (e)	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	4.00c
St. Louis	3.00c-3.15c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston††	3.85c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.45c
Cincinnati	3.50c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.20c
New York	3.75c-4.00c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.50c
San Fran.	3.90c
Seattle	4.50c
St. Louis	3.70c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Buffalo	4.00c
Boston††	4.05c
Chattanooga	3.95c
Chicago	3.50c-3.75c

††Base 15,000 lbs., extras on less.

Cincinnati	3.90c
Cleveland	3.75c
Detroit	3.75c
Houston	3.57c
Los Ang.	4.50c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	5.00c
San Fran.	4.55c
Seattle	5.00c
St. Louis	4.00c
St. Paul	4.19c
Tulsa	5.10c

†BANDS

Baltimore	2.65c
Boston††	3.40c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	2.85c
Los Ang.	3.80c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

†HOOPS

Baltimore	2.65c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter	3.30c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

†New extras apply.

COLD FIN. STEEL

Rounds and Hexagons

Baltimore (c)*	3.48c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.65c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York(g)	3.54c
Philadelphia*	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran(d)(f)	5.55c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.36c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex. only.
(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) Bessemer analysis extras included.
‡Domestic bars.
*Plus quan. extras.
**Less than 25 sheets.
*†50 or more bundles.

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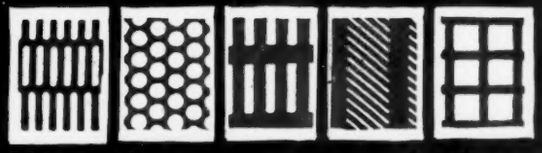

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Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

LEE, MASS.—Eaton-Dikeman Co. plans a new boiler plant in rebuilding its mill, recently burned. Electric power equipment will be installed in the mill. Calvin C. Yates is president and general manager.

New York

BUFFALO — Becker-Prentiss Co., wholesale grocer, has awarded a contract to John W. Cowper Co., Buffalo, at $75,000 for a warehouse building at Clinton street and Bailey avenue.

BUFFALO—Dell Hydro-Power Corp. has been incorporated with $200,000 preferred stock and 5100 shares no par value to build engines, by C. A. Hamlin, Buffalo.

DECATUR, N. Y.—New York Power & Light Co., 126 State street, Albany, N. Y., plans constructing an electric power plant and distributing lines in Otsego county, to cost $28,000.

LINDENHURST, N. Y.—James R. Smith Mfg. Corp. has been incorporated with $10,000 capital to build heating plants, by J. M. Dodson, Bay Shore, N. Y.

NEW YORK—Consolidated Staple Co. has been incorporated with $20,000 capital to manufacture machinery, by L. Weisen, 1133 Broadway, New York.

NEW YORK—American Iron & Metal Corp. has been incorporated with $10,000 capital by N. Siegel, 261 Broadway, New York.

NEW YORK—General Pump Co. has been incorporated with $66,000 capital by Eppstein & Hirschfield, 521 Fifth avenue, New York.

NEW YORK—Jackson Bed Spring Co. has been incorporated with $10,000 capital by M. P. Paley, 2 Rector street, New York.

NEW YORK—Roxy Pressing Machine & Burner Corp. has been incorporated with $20,000 capital to manufacture pressers and ranges, by H. Friedman, 522 Fifth avenue, New York.

NEW YORK—Woodside Sheet Metal & Roofing Co. has been incorporated with 100 shares no par value to manufacture sheet metal products, by C. M. Arak, 51 Chambers street, New York.

NEW YORK—Mono-Machine Corp. has been incorporated with 150 shares no par value to manufacture monogramming machines, by A. N. Geller, 122 East Forty-second street, New York.

NEW YORK—Neu-Dimond Wire Corp. has been incorporated with $50,000 capital to manufacture metal wire, by C. A. Levy, 110 William street, New York.

NEW YORK—Fuller Blade Co. has been incorporated with 200 shares no par value to manufacture cutlery, by Hirsh, Newman, Reass & Becker, 100 Broadway, New York.

NEW YORK—Norwell Refrigerator Machine Co. has been incorporated with $15,000 preferred capital and 500 shares no par value to manufacture refrigeration machinery, by J. A. McGuinn, 15 William street, New York.

ROCHESTER, N. Y.—Miller Carbonic Sales has been incorporated with 100 shares no par value to manufacture gas drums and cylinders, by R. Miller, Rochester, N. Y.

New Jersey

CLIFTON, N. J.—Athenia Steel Co. is building a 1-story boiler-room addition, to cost about $28,500.

DELAWANNA, N. J.—Delawanna Iron & Metal Co. has been incorporated with $50,000 capital to deal in steel, iron and metal scrap, by William Werksman, Passaic, N. J.

PASSAIC, N. J.—New Jersey Iron & Steel Construction Co. has been incorporated with 100 shares no par value to construct fire escapes and railings, by Martin Klughaupt, Passaic, N. J.

Pennsylvania

CORAOPOLIS, PA.—Bids will be received at the office of the borough secretary, Borough building, Coraopolis, Pa., until Jan. 17 for furnishing and erecting a diesel engine of 180 horsepower, direct connected to generator and exciter on the crank shaft in the main pumping station of the water works at Coraopolis.

GLASSPORT, Pa.—American Barge Line is building further transfer facilities at its rail-river terminal here, on the Monongahela river. About 10,000 square feet of storage space will be added.

GREENVILLE, PA.—Contract for a postoffice building has been awarded to the Ideal Construction Co., Gary, Ind., at $128,500.

PITTSBURGH—Carnegie Steel Co. has applied to United States engineers for a permit to install a barge shifter at its Mingo, O., plant on the Ohio river, 70 miles below Pittsburgh.

YORK, PA.—Emerton Co. has been incorporated with $10,000 capital to manufacture products of iron, steel, tin, copper and alloys, by G. Ed Schwartz, York, Pa.

Ohio

AMHERST, O.—Plans are under way for an electric light plant for the village of Amherst, O. Cost is estimated at $100,000.

CLEVELAND—An incinerator plant is under consideration by the city. William S. Lougee is city architect.

CLEVELAND — Highway Construction Co. has been awarded a contract at $444,963 for a viaduct and approaches 1915 feet long with 40-foot roadway on Brook Park road over Rocky river.

CLEVELAND—Albert M. Higley Co. has been given a contract for an addition to the Ivanhoe plant of the General Electric Co., 1133 East 152nd street. W. E. Streator, Nela Park, Cleveland, is engineer.

CLEVELAND—Ettinger Cornice & Ceiling Co. has been incorporated with 250 shares no par value to manufacture sheet steel products, by W. W. Rosenzweig, Guarantee Title building, Cleveland.

COLUMBUS, O.—Postoffice building will be out for bids soon, to cost $2,275,000. Richards, McCarthy & Bulford, 584 East Broad street, Columbus, are architects.

FINDLAY, O.—H. K. Ferguson Co., Cleveland, has the contract for factory alterations and additions for the Chamberlain Cartridge & Target Co. at Findlay. Ernest McGeorge, 1900 Euclid building, Cleveland, is architect.

LONDON, O.—Thomas & Armstrong Mfg. Co. has been reorganized. The company manufactures farm equipment. R. W. Boyd has been made president of the reorganized company.

OBERLIN, O.—Plans will be ready soon for a municipal electric light plant for the city of Oberlin. Louis A. Sears is city manager. (Noted Nov. 14.)

WILLIAMSBURG, O.—Plans will be completed soon for a municipal electric light and power plant for which bonds for $90,000 have been voted. Surveys have been made by W. S. Herr & Co., Terre Haute, Ind., and they may be retained to make plans.

Michigan

BAY CITY, MICH.—DeFoe Boat & Motor Works is having plans made for shop addition to cost $28,000.

CHARLEVOIX, MICH.—Plans are being made by city council for construction of a septic sewage disposal plant to cost about $36,000.

DETROIT—Northeastern Engineering Co. has been incorporated with $30,000 capital to manufacture tools, dies and special machines, by William Krueger, 3609 Gratiot avenue, Detroit.

EAST GRAND RAPIDS, MICH.—Department of public works is considering plans for an electric generating and power plant near Reeds Lake. (Noted Dec. 26.)

GRAND RAPIDS, MICH.—Department of public works plans construction of a power generating plant near Coldbrook street, to cost $75,000. A

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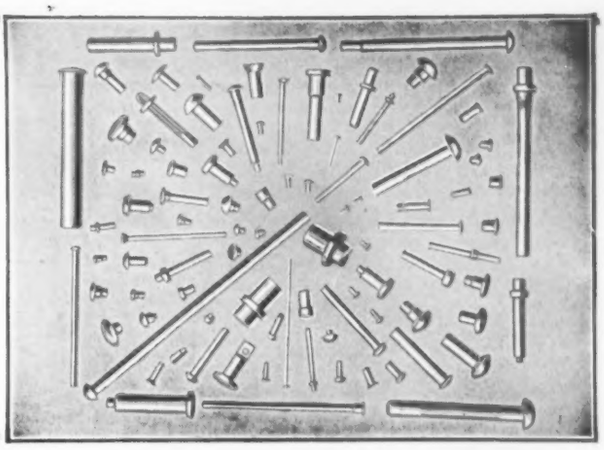

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garbage disposal plant in the northwestern section of the city is also being considered.

OWOSSO, MICH.—City council is considering plans for an electrically-operated pumping station, water softening plant and equipment, to cost about $180,000. A loan will be asked of the R. F. C.

Indiana

INDIANAPOLIS—Roy Stringer Co. Ltd. Inc. has been incorporated with 1000 shares no par value to manufacture automatic machinery, by Roy Stringer, Indianapolis.

SOUTH BEND, IND.—Sibley Mfg. Co., 220 West Eckman street, will rebuild its burned motor-casting plant immediately. Plans have been completed and construction is to be started at once.

Illinois

CHICAGO — International Standard Mfg. Corp., 1321 South Michigan avenue, has been incorporated with $10,000 capital to manufacture mechanical devices, by Irving Levinson. Coffelater Inc., 1321 South Michigan avenue, Chicago, is correspondent.

ROCK ISLAND, ILL.—Bear Mfg. Co., 2030 Fifth avenue, plans construction of an automobile parts manufacturing plant to cost $28,000, including equipment.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until Jan. 10 as follows: Schedule 9336, one motor-driven engine lathe, for Puget Sound, Wash.; schedule 9337, one motor driven molder.

Until Jan. 17: Schedule 9402, one portable center crankpin turning machine; schedule 9406, two motor-driven radial drills, for Puget Sound, Wash.; schedule 9389, one motor-driven press brake and equipment, for Puget Sound, Wash.; schedule 9396, one air conditioning system, for New York city delivery.

PAHOKEE, FLA.—City has voted $100,000 for a waterworks plant, engineers to be selected soon.

NAHUNTA, GA.—Brantley County Utilities Inc., Nahunta, Ga., Sylvan Bick, Savannah, Ga., manager, has been given an electric light and power and waterworks franchise and purposes to construct a diesel engine power plant and distributing system and a waterworks station. The cost is estimated at $90,000, including equipment.

VALDOSTA, GA.—A. A. Parrish heads a council committee to extend the municipal waterworks station, including a new oil-burning engine, dynamos, pumping machinery and auxiliary equipment, at a cost of about $100,000.

VALDOSTA, GA.—P. C. Pendleton, Mayor, is considering plans for rehabilitation of the waterworks plant, including a new oil-fired engine, pumps, elevated tank, dynamos and machinery. Cost must be guaranteed not over $102,000.

LAKE GRAND ECAILLE, LA.—Freeport Sulphur Co., 122 East Forty-second street, New York, plans a 5000-horsepower power plant in connection with its proposed new sulphur works at Lake Washington. It also plans a pumping station and water treating plant. Entire cost is estimated at $1,500,000. J. F. Coleman Engineering Co., Hibernia building, New Orleans, is consulting engineer.

NEW ORLEANS—National Mechanical Boiler Cleaner Co. has been organized with $25,000 capital, by Leo A. Loubere, president, 347 Carondelet street.

NEW ORLEANS—Federal engineers have invited bids for Jan. 10 on an agitator dredge for delivery to Vicksburgh, Miss. Boilers and machinery will be installed before delivery. Dredge will include two new hulls 135 x 30 x 7 feet.

NEW ORLEANS—Contracts for construction of the $13,000,000 Public Belt railroad bridge over the Mississippi river here have been signed by Governor O. K. Allen, representing the state highway commission and the Public Belt railroad commission, and by the contractors, and construction will be started at once. It will require 39,000 tons of structural steel and 1200 tons of reinforcing steel. Superstructure for the main bridge will be fabricated by the American Bridge Co., New York, and the superstructure approaches by the McClintic-Marshall Corp., Pittsburgh. Modjeski, Masters & Chase, 121 East Thirty-eighth street, New York, are engineers in charge.

SHREVEPORT, LA.—A. J. McCorkle, 822 Dalzell street, has been awarded a contract for building a pump house on Bayou Rapides culvert by the board of commissioners of the levee district. Worthington Pump & Machinery Corp., New York, through A. M. Lockett & Co., New Orleans, was awarded equipment, consisting of two electrically-driven pumps with capacity of 50,000 gallons each.

HUNTINGTON, W. VA.—Federal engineers will open bids Jan. 17 for construction of two steel needle flats to be used in connection with movable dams on the Ohio river. Each will be 40 x 14 x 4 feet.

PARKERSBURG, W. VA.—Ames-Baldwin-Wyoming Shovel Co. plans to build a stiff-leg derrick and to drive three clusters of piling in the Little Kanawha river as part of its plant to receive and ship freight by river.

Missouri

JOPLIN, MO.—John Brown Boiler & Metal Products Co. has been organized by John Brown, president and general manager.

ST. LOUIS—Specialty Tool Manufacturers has been incorporated with $10,000 capital by S. M. Gundlach, Box 148, Belleville, Ill.

ST. LOUIS—Industrial Construction Co., Title Guaranty building, has received a contract to build a 500-foot span steel bridge over the Osage river near Versailles, Mo.

Arkansas

MENA, ARK.—G. W. Petty heads a committee planning construction of an electric power generating plant to cost $75,000.

Texas

PLAINVIEW, TEX.—City council is having plans made for a municipal electric light and power plant to cost $75,000. Montgomery & Ward, Wichita Falls, Tex., are consulting engineers.

CONROE, TEX.—American Iron & Machine Works, Oklahoma City, Okla., has established a branch warehouse and machine shop here, in charge of C. O. Jensen, to serve the oil fields in this vicinity.

Wisconsin

DE PERE, WIS.—City council has instructed Mayor R. P. Rupiper to appoint a committee to study costs and advantages of a municipal light and power plant. R. O. Plaenert is city clerk.

MILWAUKEE — Sterling Wheelbarrow Co., West Allis, Wis., is planning to buy new equipment to cost about $15,000.

MILWAUKEE—Milcor Steel Co., 4100 West Burnham street, manufacturer of steel building materials and corrugated products, will spend about $30,000 for repairs and new equipment.

MILWAUKEE—Sivyer Steel Casting Co., 1675 South Forty-third street, plans to replace an old melting unit by an electric furnace at cost of $25,000 to $30,000 and employment of about 50 men for 30 days. Lamar S. Peregoy is president.

RACINE, WIS.—Hammes Mfg. Co. has been incorporated with $10,000 capital to manufacture mechanical appliances, instruments and machines, by Frank J. Born and associates, in care of Ellis J. Hughes, attorney, 1419 Washington avenue, Milwaukee.

Nebraska

AUSTIN, NEBR.—Dr. J. E. Bowman, Loup City, Nebr., heads a company being formed to construct and operate a hydroelectric plant on Middle Loup river near Austin. Hanningson Engineering Co., Union State Bank building, Omaha, is making plans. Estimated cost is $100,000.

Wyoming

CHEYENNE, WYO.—Wyoming Public Service commission has authorized a certificate to C. J. Call, Pocatello, Idaho, permitting him to build an electric generating plant on Swift Creek. It will

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CLEARMONT, WYO.—M. B. Schickley, Clearmont, has applied for a franchise for construction of a hydroelectric light and power plant. Engineer has not been selected.

Idaho

CALDWELL, IDAHO—Caldwell Refining Co. has been incorporated with $50,000 capital and has completed plans for immediate construction of a crude oil refinery to cost $150,000.

Arizona

MIAMI, ARIZ.—Texas Co., 929 South Broadway, Los Angeles, will rebuild its storage plant here, including four tanks, loading racks, warehouse and pipe lines, to cost about $30,000.

PHOENIX, ARIZ.—Consolidated Steel Pipe & Tank Co., Franklin Hageman, president, plans installation of electric power equipment in its new 1-story steel plant, 80 x 150 feet, to cost about $70,000, an electric traveling crane to be included.

Pacific Coast

ALAMEDA, CALIF.—City trustees are considering a report by Burns-McDonnell-Smith Engineering Corp., West Pacific building, Los Angeles, consulting engineer, for a proposed municipal steam turbine electric light and power plant with capacity of 15,000 kilowatts. Cost is estimated at $1,000,000.

LOS ANGELES—Monarch Refineries Inc., 412 West Sixth street, Charles W. Fourl, president, plans installation of pumping machinery and auxiliary equipment in a proposed new oil refining plant in the Signal Hill district, to cost over $90,000.

PASADENA, CALIF.—Municipal light and power department has bought a site 380 x 416 feet on North Santa Anita avenue and plans to construct a power substation costing more than $175,000, with equipment.

COTTAGE GROVE, OREG.——Cecil Wooley has started production of his recently-invented stamp mill which has met successfully tests of operation in the Bohemia mining district. Its small size makes it easily portable.

PORTLAND, OREG.—Hearings will be held Jan. 10 on technical details of the proposed toll bridge across the Columbia river at Astoria, Oreg., which will be submitted to the advisory board of the R. F. C. Proponents are asking a $6,000,000 loan. Rivers Improvement Corp. has been formed to further the project. Employment of 1700 men for 18 months is promised if the bridge is built.

BELLINGHAM, WASH.—W. H. Abbott, attorney, Mason building, has incorporated the Callam Bay & Southern Railway Co. with capital of $999,000, for J. N. Donovan and associates. A logging railroad will be built into the Olympic peninsula.

SPOKANE, WASH.—County commissioners have granted a franchise to Washington Water Power Co. to extend its power and light service lines into the East Farms section.

TIETON, WASH. — Molybdenum Mines Co., H. L. Hill, president, has proved a deposit of molybdenum ore and tests made by Bunker Hill smelter encourages plans for erection of a mill near the mine site.

Dominion of Canada

VANCOUVER, B. C.—Hi-Way Oil Co. Ltd., 902 Yorkshire building, recently incorporated, is building an oil refinery on a 3-acre site in South Westminster, at estimated cost of $100,000. Plans are at W. L. MacKenzie, manager. B. V. Hole has the general contract. Bids for storage tanks will be taken soon.

MONCTON, N. B.—W. R. Turnbull, consulting engineer for the Petitcodiac Tidal Power Co., recommends a dam in the Petitcodiac river for development of 30,000 to 35,000 horsepower from tidal waters, with consideration of a larger project later.

LONDON, ONT.— Kellog Canada Co., W. Butler, manager, is taking bids through Watt & Blackwell, architects, Victor building, Dundas street, on a 1-story machine shop, 52 x 96 feet, with complete equipment, prices of equipment being asked.

New Trade Publications

FURNACES—Hevi Duty Electric Co., Milwaukee, in bulletin No. 1132 describes its new feature for controlling atmospheres in its box-type furnaces.

COLD-FINISHED STEEL—Wyckoff Drawn Steel Co., Pittsburgh, has issued a leaflet calling attention to the value in industry of cold-finished steels for many uses.

PRECISION BORING MACHINES—Ex-Cell-O Aircraft & Tool Corp., Detroit, in catalog DB-3132 describes its two models of precision boring machines, for light and heavy production work. It is illustrated and the text gives full information.

HOIST MOTORS — General Electric Co., Schenectady, N. Y., has published bulletin GEA-1366 describing a small alternating current hoist motor. The units are provided with rating from 1½ to 15 horsepower and operate at standard speeds.

SAND-BLAST HELMET—Pangborn Corp., Hagerstown, Md., in a current bulletin, No. 193, describes its latest model sand blast helmet, designed to avoid dangers from dust in the various processes of industry. The bulletin is illustrated to show its provisions for safety and comfort.

STAINLESS CLAD STEEL—Ingersoll Steel & Disc Co., 310 South Michigan avenue, Chicago, a division of the Borg-Warner Corp., has issued a folder describing the composition, method of manufacture and fabrication of stainless clad steel. It also illustrates and lists many applications of this material.

SPEED CONTROL — Reeves Pulley Co., Columbus, Ind., in its bulletin T-5645 presents data to answer questions regarding automatic variable speed control of production machines in all lines of industry. It is illustrated to show construction and operation of the speed control equipment.

CRANES — "Overhead Handling at Low Cost" is the subject of catalog No. 214 recently published by the Whiting Corp., Harvey, Ill. The publication is well illustrated with views of various parts of the cranes, and numerous illustrations showing installations in a variety of industries.

STAINLESS STEEL—Electro Metallurgical Co., Carbide and Carbon building, 30 East Forty-second street, New York, has published a bulletin entitled "Stainless Steel in the Brewing Industry" in which the application of austenitic stainless steel in one of the oldest industries is discussed.

ACIDSEAL PAINT—B. F. Goodrich Rubber Co., Akron, O., is distributing a sales manual section devoted to paints which have as a base a commercial form of rubber isomer, a development of the Goodrich laboratory. Special features claimed for the paint are exceptional properties of adhesion when properly applied, drying in one hour to a hard film but retaining to a remarkable degree the elastic properties of rubber, retaining the chemically resistant properties of rubber and providing a protective coating that minimizes the corrosive action of acids, alkalies and chemical fumes. The film is not water absorbent.

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